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THE RUBBER AGE

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MANAGING EDITOR

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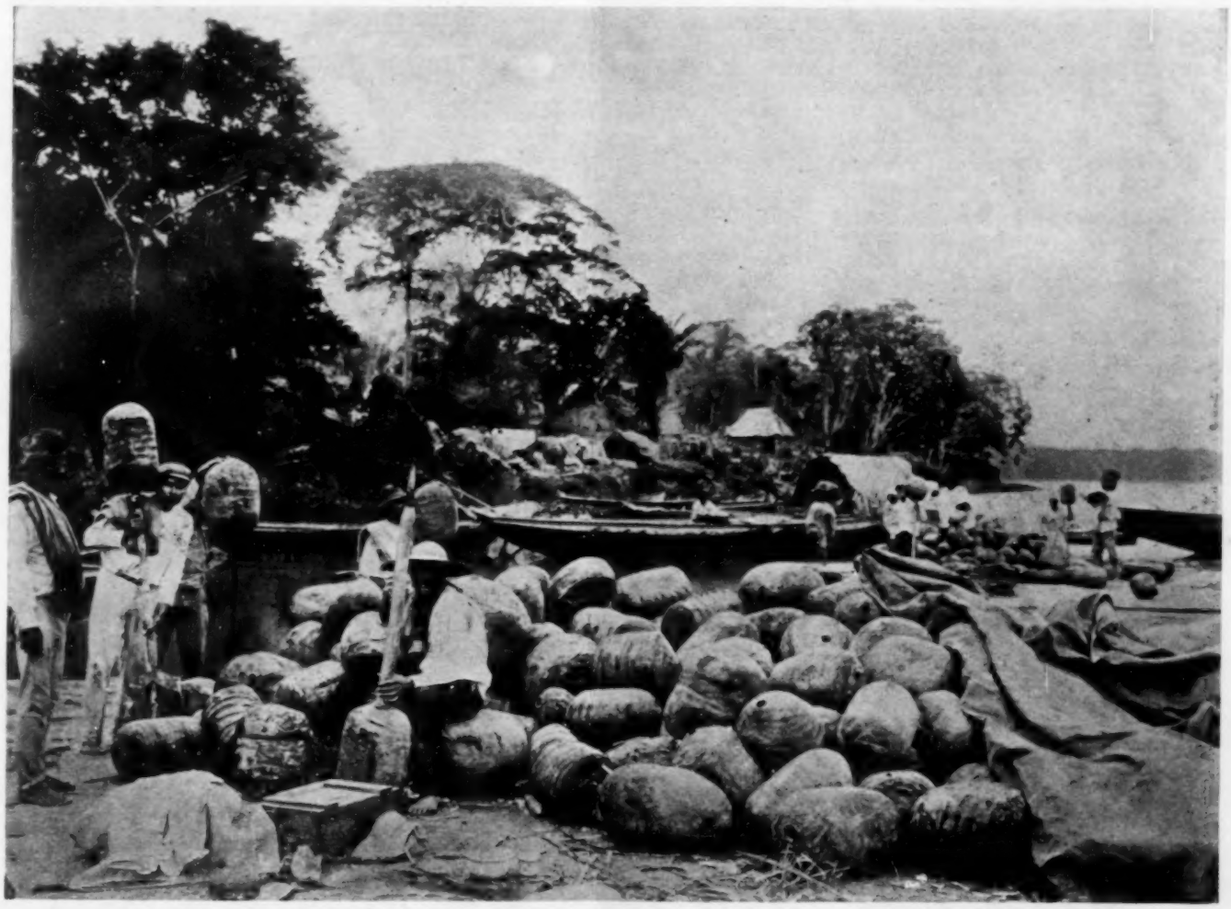
Conditions in the Rubber Districts of Brazil

An Interview with O. G. Saxon of the Crude Rubber Department of Arnold Dorr & Co., New York, Who Recently Returned from South America

THE news that has reached this country in the past few years from the crude rubber producing districts of Brazil has been somewhat fragmentary as few members of the trade make the South American trip any more since the interest has turned so largely to the rubber plantations of British Malaya, Ceylon and the Dutch East Indies.

The observations of O. G. Saxon, head of the Crude Rubber Department of Arnold Dorr & Co., of 93 Water Street, New York, who returned on March 28 from a three months tour of the rubber-producing districts of northern Brazil thus become of more than ordinary interest. The firm with which he is connected handle Brazil nuts and other kinds of South American produce so that his trip was to investigate general economic conditions in Brazil which he found extremely bad.

"There is no longer any organized gathering of rubber in Brazil," he said, "and the labor which in former years had depended upon rubber for a livelihood has now had to turn to other lines entirely. The condition of a great deal of this labor is desperate in the extreme. The native Indians have returned to their jungles where they can live on nuts and fruits. The Portuguese, Barbados negroes, *cabocos*, or half-breeds, and other laborers who came into the rubber districts some years ago during the good times have been in a starving condition and the Brazilian government is taking them away as fast as it can. They are bringing out a boat-load of approximately 1,800 laborers every month from the upper reaches of the Amazon and its tributary rivers and distributing them along the coast in the sugar and coffee districts



RUBBER BISCUITS COLLECTED FOR SHIPMENT IN THE OLD DAYS AT AN AMAZON RIVER-BOAT DEPOT

of Southern Brazil. When laborers obtain employment they receive from two to three milreis a day equivalent in our money to 28 cents to 42 cents.

"My first stopping point after leaving New York was Ceara where you will remember Ceara scrap used to come from. This rubber no longer comes to the New York market as in common with the other South American grades the low price that can be obtained for it does not pay for gathering it. From Ceara I went to Para and then 1,200 miles up the Amazon to the former prosperous City of Manaos. When the rubber trade in Brazil was thriving, Manaos, the capital of the state of Amazonas, was a city of over 75,000 people. There are probably not more than 25,000 people left there now. It appears like a deserted city, street after street of houses being vacant, the roofs falling in and every evidence of decay and dilapidation.

"An index of conditions in Manaos is the fact that custom house officials there have not received any salary for more than a year and a half and any merchant or trader who wishes to have papers passed through is obliged to give these officials special gratuities.

"Conditions are not quite so bad in Para. But even that city that had formerly a population of 300,000 people has now dropped to below 200,000.

"On my way back from Manaos to Para, I stopped at every river-boat station and picked up all information I was able regarding conditions. What labor there is left in the Amazon Basin is occupied principally in gathering Brazil nuts which are harvested during the months from December to June, and is the only crop which is keeping the country in habitable condition. There are probably not half a dozen *seringuas*, or rubber concessions, in the Amazon Valley which are sending any rubber to Para. During the year 1921 the United States imported only 11,000 tons of rubber from Brazil, but it is estimated that the entire production this year will only be 10,000 tons in all Brazil, and a great part of this will go to Germany and France, the smaller amounts going to England and the United States.

"Practically the only rubber which is being received at Para is that which is bartered with the natives and half-breeds in exchange for food stuffs, cloth and other necessities. This rubber comes to commission houses in Para and Manaos and is there put up for sale at auction. It is purely a matter of chance how much rubber comes into the market as there is no way of estimating it in advance, because, as remarked above, there is no organized rubber gathering going on at the present time. This is why it is impossible to buy futures in Brazilian rubbers, and it is a point that American manufacturers should digest thoroughly in any consideration they give to the South American Market. There are no futures.

"Germany and France seem to be favoring the South American rubbers and it is also true that freight rates favor shipments to Europe rather than to New York, as a Portuguese steamer line now sends a boat once a month to Europe in competition with the two English lines. Hamburg and Havre are buying rubber both direct and through the English trading houses.

"One encouraging point that I picked up in Brazil is that about 300 tons of balata is being shipped this month from Iquitos to this market. This is the more remarkable as not more than 100 tons of balata has ever come out of the Amazon Valley before in an entire year. As you know, the demand for balata is greater than the supply.

"Another product that may mean a great deal to Brazil is chicle. I brought back samples that have been tested and are reported to be almost equal to the Mexican chicle and better than the Colombian.

"While the economic condition of northern Brazil is extremely bad at the present time, I believe it has a great future in the production of Brazilian nuts, balata and chicle and many kinds of high grade timber.

BRAZILIAN NATIVES CARRYING RUBBER DOWN TO THE RIVER BANKS—SCENE ALONG ONE OF THE MANY TRIBUTARIES OF THE AMAZON

"The wealth of the Brazilian jungles in rubber is practically inexhaustible, and the Brazilians themselves are very insistent in their propaganda in favor of the use of Brazilian rubber. On all sides you will hear that American tires in which, of course, plantation rubber is principally used, do not stand up well. They are turning largely to European manufacturers for their tires. They believe that the time will come when American manufacturers will find it expedient to mix a much larger proportion of Para rubber with plantation in the production of tires. On this they base their hope for the eventual rehabilitation of the rubber gathering industry in Amazonas which was the principal industry in that state up to 1920."

The Importance of Team Work in the Factory

An Interesting Discussion of the Many Factors which Govern both Honest Co-operation and Errors, Written with Sympathy and Understanding

By Arthur E. Friswell

IN all rubber factories whenever anything goes wrong with a stock the first impulse is to tell the trouble to the compounder, or to refer to the compound book, or to throw the whole responsibility on to the Laboratory. Without trying to absolve the originators of compounds and processes from all blame in every case, (because they are human and fallible) I do want to point out that they are often made the convenient scapegoats for many things that go wrong in the factory, quite beyond laboratory control.

I select at random one illustration out of many:

What Can Happen to a Friction Belt?

Consider a friction belt compound that has been working well and showing a good test which suddenly goes wrong and fails under test. What can happen to it in the factory to make it go wrong? Here are some of the things.

1. The compound man may use wrong ingredients or wrong weights. Of course, each batch should be checked, but is it? Frequently a test for specific gravity shows that it is not.

2. The mixing man may overwork or underwork the rubber before adding the powders. This breaking down process should be very carefully controlled, *and timed.* In fact, it should be a separate operation from mixing altogether. It is an even more important operation than mixing, because breaking down does something to the "nerve" of all rubbers which possess any nerve, (some low grade rubbers do not) which nothing can ever *completely* restore afterwards. As a general rule the less punishment given to rubber, the better for its subsequent life, but it is obvious that rubber for a friction compound must be milled to a greater plasticity than is required for, say, an inner tube stock. The breaking down operation therefore calls for discrimination, judgment, and control on the part of some one responsible to the mill room foreman, and to the superintendent.

The Breaking Down Operation

If the rubber is not broken down sufficiently, it will, of course, fail in the frictioning process, it cannot be forced into the interstices of the duck, but will either deposit an excessive coat on the surface only or will roll along the surface, neither penetrating nor depositing.

After the breaking down operation the rubber should be set aside for at least twenty-four hours and longer, if possible, to cool and recover from "fatigue" before the powders are added. Now, how are these elementary precautions observed in many factories? Why, simply not at all!

I have been in shops where the breaking down is a purely haphazard performance, where the mixing man operates two mills, one milling the crude rubber, while the mixer is mixing a batch on the other mill. If he happens to be mixing a batch which he can cut off in twenty minutes, then the crude rubber receives twenty minutes breaking down; if he happens to be mixing a batch into which he cannot force the powders in less than thirty-five minutes, then the crude rubber receives thirty-five minutes breaking down. Obviously this is wrong, but it is not the whole of the iniquity, because the mixing man cannot give the required attention to both mills simultaneously. *He can do but one thing at a time,* so something must suffer, and what does suffer is the batch of crude rubber.

Every mill man who knows anything of mill-room work knows that to thoroughly work a batch, it must be cut off the rolls and thrown back into the bite of the rolls frequently, otherwise only that part of the batch which is travelling on one of the rolls is receiving any working, while that part which is not drawn between the rolls is receiving none. Then, instead of permitting the batch of overworked or underworked rubber to cool off and rest, as it should, before the powders are added, it is at once dumped into the mixing mill, and its punishment continues, while:

3. The mixing man (if paid day work) takes a little breathing spell, or, if paid piece work, shovels in the powders as rapidly as possible, regardless of the temperature of his rolls, regardless of possible scorching, regardless of whether powders are spilled out of the pan onto the floor, regardless of everything but getting that batch off his hands, and tackling another.

Does this sort of thing affect the final test of the friction in the laboratory? Does it? Ask any laboratory man! What can the laboratory man do about it? Well he can take an hour or two off from his laboratory work (if he has time, and as a matter of fact, should do so occasionally whether he has time or not) and watch these and other operations, and report to the superintendent, but the rank and file know he is watching and will naturally be more careful while he is watching, and anyway it is not really the laboratory man's job.

Mill Room Men vs Laboratory Men

Also, in many shops, the mill room foreman and the superintendent, firmly convinced that they are not to blame, resent the butting in of the laboratory man, thinking that he is getting ready to "pass the buck back to them." Tension between the laboratory and the factory has commenced. Team work is already strained.

Right here I wish to say a word for the mill room foreman and superintendent and against some laboratory men.

Many of the latter are young technical graduates with no working knowledge of factory conditions, who are primed only with text book theories, and who think, that because they get certain results from a batch mixed, cured, and tested in the laboratory under exact scientific control, that the same results can always be obtained from the factory, making no allowance for very different conditions, whereas every practical man knows that the conditions are very different in the factory and that a certain tolerance must be granted.

However, reasonable tolerance is one thing, no control whatsoever is a horse of quite another color.

A *good* laboratory man must possess tact as well as practical knowledge, to be regarded (as he must be regarded to accomplish anything useful) as the friend and advisor of the factory—the good doctor, in other words. *Never the dictatorial boss.* The *good* superintendent should welcome—not resent—such co-operative advice and help when tactfully proffered. Team work! Team work!! and again team work!!!

Nothing can be done without it but this is "Obiter dicta."

Continuing with the working of rubber I come to the working back into the batch of uncured scrap. Assuming that the scrap returned to the mill room foreman from the calender or from any part of the plant is what it is tagged (if tagged at all) and that it is not something else (a very big assumption indeed in many plants) how should this scrap be regarded in relation to newly mixed stock? Well; certainly not as newly mixed stock, because it has already received its full dose of

punishment, and probably more, and cannot be considered capable of withstanding indefinite gruelling. The right way to handle the always troublesome scrap problem, is to first determine the normal percentage of scrap of a given compound, and setting it at an average of, say, 10 per cent, then either 10 per cent, *no more and no less should always be worked in with newly mixed stock, or none at all*, but the scrap set aside for re-compounding into something else—one or the other, but never all scrap one day, and all new stock the next, as is, unfortunately, too often the practice. This is a vitally important matter. Can the laboratory man control it? No; nor is he supposed to do so, its not his work, but it is certainly up to someone.

After a batch is mixed it should be permitted to cool off and recover for at least twenty-four hours, and a longer period is better, before it goes to the calender. Over and over again I have seen stock condemned, and radical changes made in the formula when there was nothing wrong with the stock, except that it had been rushed through and ruined by rushing, and I have seen such stock which had been necessarily set aside for a week or two, tried again and work beautifully; but some mill men never seem to learn that often "the more haste, the less speed," or the meaning of "make haste slowly." In his poem "Screw Guns," Kipling conveys this idea in the line "And *spring* without snatching or fuss."

I have also seen scorched stock treated surreptitiously to a dose of cotton seed oil, or palm oil, or some other temporary emollient as a "get-by" regardless of its later effect upon laboratory tests. Can the laboratory man guard, in his formula, against this sort of practice? No sir! and he is not supposed to do so, but someone should. If that's not up to the Superintendent, then who is it up to? Now I come to:

The Calender Man

4. What the calender man can do to make a good friction go wrong. Assuming that the stock delivered to him is all that it should be (though often it is not) and assuming that it has been giving no trouble at the calender, and all of a sudden he reports that he can do nothing with it, or he does not report but "gets by" somehow. (How I do loathe that slipshod expression, both as an expression and for what it conveys.)

Well; suppose he fails to take time to warm or cool his rolls properly, that his bottom roll is so hot that he cannot bear his hand on it, when it should be just warm, or that it is chilled, or that the same wrong conditions exist with the middle or top rolls, because the mill room work has not been so scheduled that the stocks requiring cool or cold rolls are dealt with at the beginning of the day, and, as the rolls become warmed up by friction, stocks requiring heat, follow along until those requiring great heat close the calendering operations for the day. This is the common-sense way of arranging a day's calender run in small plants turning out a variety of work, where the volume output is not large enough to permit of a calender's running on one or more similar stocks steadily; but, in many small plants, such common sense is conspicuous by its absence.

Often, when the calender man has himself scorched a stock he reports that it was scorched when he received it, and as it is a known fact in the shop that stock does often reach the calender in a scorched condition, here's a lovely opportunity for "passing the buck." Who is responsible? The laboratory man? I don't think so. Running a calender is not what he is paid to do, though he should occasionally watch calendering operations and more than that, should actually work on a calender before ever entering the laboratory at all, otherwise, not only is he unable to criticize intelligently, but is very apt to make a fool of himself before the rank and file by attempting to criticize.

Workmen are wonderfully quick to discover whether a man knows what he is doing or talking about, or whether he is a mere "hot-air artist," or a "dumbell." I have found that in most cases the workman can fool the laboratory man much more often than the laboratory man can fool the workman, and once the laboratory man has exhibited his incapacity in the factory, he might as well look for another job, so far as his usefulness to the organization is concerned

Of course, this antagonism (open or covert) should not exist between the factory and laboratory; but it does exist in many plants, and it is absolutely contrary to the right spirit of *Team Work*. Proceeding with what the calender man can do intentionally or otherwise to spoil a good friction stock. Well; he can permit the tailings from the guides to accumulate until they drop on the floor, and become cold, and instead of passing them back to the warming mill, he can pick them up, and fling them into the bank with a muttered "oh, H....!" (this often happens on Monday) and the result is, several yards of duck clean and bare from any suggestion of frictioning. Does he do such things?

Is there any other crime against the formula of which the calender man may be guilty? Yes; several, but one more must close this item of the discussion. The calender man can fiddle about with his heats while the end of the roll of duck gets cold and damp, so that when he starts this end through the rolls the gum picks up for several yards, and when the belt room foreman receives this roll he chops this end off, *or worse*, runs it through and "lets 'er go!" Either waste, or bad work, and if he "lets 'er go," and this part of the belt reaches the laboratory for test, why, of course, it fails, and along the same lines, when the calender man reaches the end of the roll of duck he can let it drag through the dust and soapstone on the floor beneath the calender (this floor should be cleaned several times daily, but often gets a lick and a promise once a week) so that the gum picks up for several yards at the end as at the beginning of the roll, and the belt room foreman repeats his performance at the end, as at the beginning of the roll, and a few more yards are scrapped, or "get by" to fail in the tests or come back from the customer later. Can the laboratory man watch all this? Decidedly not. Should he do so? Decidedly not. Should any one do so? Decidedly yes. "Tag" you're it" and the merry game of passing the buck goes on. Where's the Team Work? Now I come to 6. Duck drying. Well, here are opportunities for several things to go wrong and affect the working of the compound.

a) The duck may not be thoroughly dried but rushed through, so that some moisture content remains; (b) it may be thoroughly dried and then instead of being placed in a dry room or closet until needed, be left exposed in a draughty room or alley, where it quickly and greedily sucks in more moisture than was drawn off, or placed under a dripping steam or water pipe, or (c) it may be properly placed in the dry room, but removed therefrom before the calender man is quite ready to use it, so that it again absorbs moisture. Any of these things absolutely prevent good frictioning, and may cause a later test to indicate a 10 or 15 per cent friction strength instead of the 20 per cent or 25 per cent for which the compound was designed; then to the pressing and curing operation:

The Test

7. A number of things may happen here to ruin the test, and even to ruin the belt; (a) There may be stagnant pools and pockets of water in the platens, because the pipes are choked, or because of insufficient circulation of brisk, dry steam; (b) The hydraulic pump may go on strike, or the accumulator fail to work just when it is most essential for pressure to be maintained. To be sure, a good press man should be alive to these possibilities, but operating a press is deadly monotonous work, and many press men are neither selected nor paid for any great amount of intelligence. Again, a press man may use a gage bar too light, or too heavy for the belt thickness, as, for instance, a 5/32 in. bar for ¼ in. or vice versa, and one of two things results, viz: Either the belt is crushed excessively and rendered brittle, or it receives insufficient pressure, in which case the friction fails under test, through no fault of the compound book. Then, I have known of a careless or overtired press man's forgetting to change all the loops in a press area (where a belt is looped) with the result that one or more lengths are double cured and burned, and finally, the stretching operation calls for care and judgment which it does not always receive, so that a belt cut from a roll may give excellent service and bring a repeat order; and another belt from the same roll may prove so unsatisfactory in service as to condemn any further use of that brand in that particular shop.

"TEAM WORK is a positive "sine qua non" in these days of keen competition. "A house divided against itself cannot stand."

The Composition and Use of Golden Sulphide of Antimony

At a meeting of the Newcastle Section of the Society of Chemical Industry (of England) during the early part of March, A. Short, M.S., F.I.C., and F. H. Sharpe, submitted an interesting paper, a report of which we are reproducing from a recent issue of *The India-Rubber Journal*:

The authors pointed out that precipitated sulphide of antimony had been used in the manufacture of red rubber articles practically from the time that the process of vulcanization was discovered in the early part of last century. Considerable quantities were used in the manufacture of such familiar articles as motor tubes, hot-water bottles, gas tubing, etc. Golden sulphide of antimony was particularly suitable for that purpose, for besides imparting a pleasing reddish yellow color to the rubber, the co-precipitated sulphur which it contained was used to effect the vulcanization of the rubber. A. H. King, referring to the good qualities of antimony rubber tubes stated that antimony sulphide appeared to act as a stabilizer, counteracting the effect of polymerization, and that antimony tubes had been known to retain their physical properties after more than ten years' service without serious deterioration. It was, therefore, highly important that the composition and properties of the material should be fully investigated. The analytical study of golden sulphide of antimony (generally called penta-sulphide of antimony) and the question of the composition of the commercial product had been the subject of much investigation. It was fairly generally assumed that it was substantially composed of penta-sulphide of antimony. It was associated in most cases with other materials, such as co-precipitated sulphur, and also co-precipitated calcium sulphate. It had also been stated that the solvents which were generally used in determining the free sulphur content, e.g., carbon bisulphide, decomposed the penta-sulphide of antimony, leaving more or less antimony trisulphide in the residue. The authors referred them to a full *résumé* by Luff and Porritt on the question. The evidence upon which the assumption was based seemed to the authors to be somewhat inconclusive, and they submitted the assumption was incorrect, and that, on the contrary, commercial golden sulphide was not penta-sulphide but tetra-sulphide of antimony, and that it was a stable compound not decomposed by carbon bi-sulphide. Direct evidence that golden sulphide of antimony was decomposed by those solvents was difficult to obtain, as was direct evidence to the contrary. It was, therefore, mainly on the interpretation of a large number of analyses that the authors arrived at their conclusions. The authors then described the classic method for the preparation of golden sulphide of antimony by the decomposition of Schlippe's salt. It was well known, they continued, that the product prepared in that way yielded a considerable amount of free sulphur to carbon bi-sulphide, hence the theory that the carbon bi-sulphide partially decomposed the penta-sulphide with the formation of free sulphur and a corresponding amount of tri-sulphide. If that were the case it was curious to find that the decomposition was only partial, and that the residue corresponded to tetra-sulphide and not to tri-sulphide, as was generally supposed. The extraction with carbon bi-sulphide was almost universally employed by rubber manufacturers to determine the amount of free sulphur available for vulcanizing, and results confirmed the utility of the method. Van Rossem and Dekker had cast doubts upon the results of the method in the case of "true" golden sulphide. From results obtained by an indirect method they concluded that the amount of free sulphur was generally considerably lower than that obtained by extraction with carbon bi-sulphide, and the difference was again attributed to the partial decomposition of the penta-sulphide by carbon bisulphide. During the past few years the authors had had an opportunity of examining for commercial purposes many samples of golden sulphide of antimony from various sources. The antimony content of the dried sample was carefully determined by the bromate method; the free sulphur by extraction on a Soxhlet tube with pure carbon bisulphide; and the calcium was separated as oxalate and determined volumetrically. It was found, in almost every case that if the antimony content was calculated as tetra-sulphide Sb_2S_4, the sum of the main constituents, viz., antimony sulphide expressed as tetra- sulphide, free sulphur and calcium sulphate ($CaSO_4 2H_2O$) totalled practically 100 per cent. Other impurities, such as free acid and foreign matter, were present in negligible quantities. The only exceptions were samples which were obviously composed of trisulphide, some of which contained practically no free sulphur. . . . . The authors came to the conclusion that in the absence of real evidence that a comparatively inert substance, such as carbon bi-sulphide brought about decomposition of penta-sulphide, it was more probable that the decomposition of Schlippe's salt with dilute acids resulted in the production of a mixture of antimony tetra-sulphide and sulphur according to the following equation:—

$$2Na_3SbS_4 + 6HCl = 6NaCl + 3H_2S + Sb_2S_4 + S.$$

Examination of the figures given by Luff and Porritt, said the authors, showed that only one of the examples given by them corresponded to "true" golden sulphide, i.e., similar to that prepared from Schlippe's salt. Again, if Van Rossem and Dekker's figures were recalculated, on the assumption that tetra-sulphide was present and not penta-sulphide, a new indirect figure was obtained for free sulphur, which, in every case but one, would be found to agree very closely with the direct free sulphur determination by carbon bisulphide, thus confirming the view set forth by the authors. The authors projected an elaborate table showing the re-calculated results together with the free sulphur contents by direct extraction. The results of the investigation, they concluded, indicated that, while the existence of penta-sulphide of antimony was not precluded, commercial golden sulphide of antimony probably contained no higher sulphide than tetra-sulphide, and that there was strong evidence of the existence of the latter, which might be looked upon as either the antimony salt of thio-antimonic acid, viz., $Sb'''SbS_4$, or as the compound $Sb_2S_3 Sb_2 S_5$. They also indicated that the sulphur extractable by carbon bisulphide was available for vulcanization. The authors concluded by expressing their thanks to Messrs Cookson and Co., Ltd., in whose laboratories the experiments were carried out, and by whose permission the results were put before the Society.

The Discussion

The chairman (Dr. J. H. Paterson) said they were indebted to Messrs. Short and Sharpe for one of the most interesting papers they had had for some time. He had that sort of kink which made him rather enjoy hearing someone say everyone else was wrong and attempting to prove it. On the face of it the authors had made out a very good case indeed for their assertions. (Applause.)

Mr. Haddon said he did not see why it should be difficult to actually separate the sulphur mechanically by means of some levigation method.

Dr. G. Weyman said he would like to express his appreciation of the work the authors had put in in preparing such a paper as they had put before the Society. He would like to ask Mr. Short if he had ever tried the reaction of hydrogen peroxide. He had done work in other sulphides, and found hydrogen peroxide to be an excellent re-agent for proving the difference in combination of sulphide for more or less complex molecular structures. He wondered whether the authors would find it useful in their work.

Dunford Smith asked if it were not possible that Sb_2S_4 might be a mixture of two equal parts of Sb_2S_3 and Sb_2S_5?

T. A. Davidson complimented the authors on the paper which they had preparted, as he recognized it meant a great

deal of very patient work. He said that whatever discussion Mr. Short's paper would have would be in a much wider field than was represented by the audience present—particularly in the rubber world. He presumed that the equation given, showing the action of acid upon Schlippe's salt was probably more convenient than necessarily correct as representing the manufacture of golden sulphide of antimony. For instance, the ratio of sulphur to Sb_2S_4 in the equation is roughly 1 to 11, or say 9 per cent; and reference to the table of analysis shows in nearly all cases a much higher ratio of sulphur.

A. W. Rowell said he would like to know whether the free sulphur was sulphur actually originating in the product, or was it an added substance? The chemist whose duty it was to analyze sulphides found that free flowers of sulphur were sometimes added to bring it up to a certain standard. It was rather startling to have it thrown at one that the formula was Sb_2S_4. He thought they shou'd have further evidence and more time to consider the data before accepting it definitely.

Mr. Short, replying, said he thanked them on behalf of himself and Mr. Sharpe for the way in which the paper had been received. Replying to the discussion he said he thought he had made it clear from the structural formulae that one might arrive at many possible graphic formulae for Sb_2S_4, and he referred them to Kirchhof's work. So far as being able to detect the free sulphur easily, the substance in question was so prone to agglomeration in water that levigation experiments were out of the question. A reference had been made to the stable oxide being Sb_2O_4. That was correct, but it did not always follow when they drew analogies between oxides and sulphides that the analogy was perfect. Oxidization and sulphurization were rather different matters. He did not know what happened when one treated Sb_2O_4 at high temperatures. It may dissociate. He had not gone into the possibilities of hydrogen peroxide suggested by Dr. Weyman, but he thanked him for the hint. Mr Smith had raised a knotty point by asking whether it was not possibly a mixture of Sb_2S_3 and Sb_2S_5? One might ask the same question regarding white lead and its composition and red lead and its composition. The striking thing was that when one decomposed pure Schlippe salt almost invariably one got the sulphide intimately mixed with sulphur, and that it always contained about 8 per cent of free sulphur, which corresponded to the odd atom of sulphur. It was not likely that they had the three things formed. There was just the odd atom which came down as free sulphur, and it was, as he said, really a deduction that the remainder was Sb_2S_4. He agreed rubber people did not specify a certain sulphur content, but, as precipitated, the golden sulphide might not contain enough free sulphur. Generally speaking, the solution from which those substances were made contained varying amounts of poly-sulphides, and therefore the ratio of free sulphur to Sb_2S_4 was not constant, and possibly it had come about that fifteen per cent was a convenient figure, because the solutions generally gave about this amount, in the early days.

A Rubber-Resin Composition

Resins, chiefly balsamic resins and scrap resins are melted with chloride of calcium in a closed boiler at a temperature of about 160 to 200 deg. C and kept in this condition for a period of two hours. After this, the mass is filtered in order to free it from all impurities. This purified mass is then subjected to a first distillation process and during this time about 10 per cent of chloride of lime and about 2.5 per cent of chloride of calcium are added. During the slow heating to 160 to 180 deg. C a first running passes off and during the further slow heating to a temperature above 180 deg. C a second running both in the form a bad-smelling resin spirit.

The temperature is then further slowly raised to about 340 deg. C when resin oils will commence to pass over, and this temperature is uniformly maintained as long as liquid oily substances are passing over. The distillation is nearly finished when the operator perceives that the oils are becoming thick. In the first two running there is found a large part of the terpenes that were contained in the resin as well as a large part of other ethereal substances. The residue that forms after its solidification, a hard pitch-like body, contains the tars and pitch-like substances. The oils appear now completely free from water.

These oils are now subjected to a second distillation process, together with a small quantity of chloride of lime, for example about 4 to 6 per cent of the weight of the oils. The second distillation is carried through just like the first, but the residue, instead of being hard and brittle, forms a thick, lubricant-like product. The second distillation removes all the terpenes and other ethereal substances from the oils. Owing to the treatment with chlorine certain changes are made to take place in the oils so that they become well adapted for treatment with sulphur and for admixture with india rubber.

The oils then undego a third distillation process with the addition of chloride of lime in order to convert them into a chloro-resin oil. The quantity of the chloride of lime amounts in this case to from 10 per cent to 40 per cent of the weight of the oil and depends upon the desired content of chloride in the oil.

The chloro-resin oil is then ready to be mixed with rubber. About one part of revivified india rubber is used with five parts of the oil. The tarry masses that are contained in the revivified rubber due to the process under which it has gone are removed by solution in ether, wood or grain alcohol. After 12 to 24 hours the rubber has absorbed all of the oil and has been changed into a thick pulpy mass. To this mass there is added some oil obtained in the second distillation process above and sufficient sulphur to vulcanize the mixture completely. It is claimed that the product which is obtained in this manner is equal to the best grade of Para rubber. This process is patented in the United States and assigned to the Chemical Foundation, Inc., by the German inventor. (See United States Patent No. 1,399,473).

The Durability of Rubber Heels

The Bureau of Standards, Department of Commerce, has been conducting experiments on the durability and other properties of rubber heels, from which the following conclusions have been reached:

Increasing the mineral rubber used increases the strength and aging qualities.

Zinc oxide is the best filler for red heels.

The use of reclaimed rubber probably has some effect upon the abrasive quality of the heels, although additional data must be secured on this point from service tests.

At a recent meeting of representatives of the Bureau of Standards and of rubber heel manufacturers in New York, the standardization of types and sizes of rubber heels was discussed. Plans are being made for definite recommendations.

Cheap Golf Balls

In England the game of golf is the pastime of the rich and moderately well-to-do; in Scotland, its native land, it is, or was, played by all ranks and conditions of society, but it is probably news to many of our readers that the game has been taken up with enthusiasm by the negroes of the Southern States in America. We were shown this week a sample of a new golf ball which is being brought out to retail at a price of 10 cents in order to meet the demand from the last-named quarter. It is a solid rubber ball with a thin balata covering and is said to have a flight of only seven yards less than the "Haskell" ball. If it is true, as we hear, that there are over one million eager votaries of the game south of the Mason-Dixon line, it is a market really worth studying, and some of our readers doing business in South Africa and other parts of the world where there are large native populations might do well to enquire into the possibilities of similar business in those countries.—*India Rubber Journal.*

ABSTRACTS

Technical — General — Commercial

Action of Light and Oxygen on Rubber

According to B. D. Porritt, who made an extended investigation into the action of light and oxygen on rubber, which was reported in the publication, entitled, *The Physics and Chemistry of Colloids and the Bearing on Industrial Questions*, pages 81 to 88, published by His Majesty's Stationary Office at London, England, air and light acting individually or simultaneously are capable of producing very important changes in rubber. These may be summed up as follows:

1. Under ordinary conditions the action of oxygen and light appears to take place in two stages. The first stage consists of a change in the molecular condition of the rubber during which oxygen functions mainly as a catalyst. In the second stage a series of chemical reactions takes place in which the active participation of oxygen is promoted by the formation of an auto-catalyst, probably a peroxide.

2. The first change, which is what causes "tackiness" in rubber, is probably promoted or retarded by other catalysts, while the final transformation into resinous compounds of indefinite composition known as "perishing" is possibly affected by an entirely different set of catalytic accelerators and retarding agents.

3. The effect of light and oxygen, which is felt first, is the reduction in the solution viscosity. This may be reproduced by heat and mechanical working of the rubber, but the similarity between the effects produced is limited just to the very fact of the reduction in solution viscosity. Beyond that there is no similarity between the two phenomena.

4. In the presence of sulphur and under the influence of light which is rich in ultra-violet rays, instead of "depolimerization," a change which resembles that of vulcanization is induced in the rubber.

5. In the absence of air "tackiness" will not develop in the solid rubber as a result of exposure to sunlight, while under similar conditions, a benzene solution of rubber sets to a gel, which liquefies on re-exposure to air.

6. In the absence of actinic light, rubber either solid or in the form of a solution undergoes no reduction in viscosity or exposure to air, but if previously submitted to a limited amount of mastication tends to regain its initial properties This change is partly inhibited by oxygen.

7. The efficiency of sulphur as a vulcanizing agent, unless supplemented by the presence of an appropriate accelerator, is neutralized by the presence of oxygen.

8. Under conditions oxygen appears capable of acting as a vulcanizing agent.

Rubber Impregnating Composition

United States Patent No. 1,393,832, which is assigned to the Federal Products Co., is concerned with a process of manufacturing a water-proofing and impregnating composition, one of whose principal constituents is rubber. The object of the patent is to secure an effective waterproofing agent, which will be economical, light in color, free from objectionable odors and which will possess a fair degree of pliability. As the mixture is to be used in coating containers, holding food, it must not contain any poisonous constituents.

This waterproofing composition contains 90 parts by weight of aluminum oleate and 10 parts of india rubber or gutta percha. The percentage of rubber in the composition will depend on the degree of pliability desired in the coating or impregnating mixture. Where it is merely wished to render the package moisture-proof, only a few per cent of rubber need be used but where the container is to hold liquids then a larger percentage of rubber must be incorporated in the mixture.

The process consists in melting the larger part of the oleate of alumina to about 300 deg. F. and then adding a smaller part of the rubber, while maintaining the temperature at that point. It takes about three hours for the rubber to dissolve and then the temperature is raised to 320 deg. F. Steam is blown through the solution at that point for about 2 hours in order to remove the odor. The compound is then allowed to cool to about 200 deg. F. when it is dissolved preferably by the addition of 80 to 97 per cent of benzol or other suitable solvent such as gasoline, alcohol and naphtha. The solution is permitted to cool and then may be applied with a brush, or by spraying or dipping. Copper oleate may be used in the place of aluminum oleate with good results.

Hard Rubber Substitute

The Plauson's Forschungsinstitut G.m.b.H. of Hamburg has been granted a German Patent (German Patent No. 343,365) on a process of making of a hard rubber substitute from pyromucic acid. The product is a solid hard glossy mass which is obtained when pyromucic acid is heated under pressure with concentrated sulphuric acid, hydrochloric acid, phosphoric acid or mixtures of the same in the presence of phenols or oils which contain phenol, cresol or similar substances. This product can be used to good advantage as a substitute for hard rubber especially when the material is used in making parts and apparatus which has to stand up against the action of alkalies as the artificial product is very resistant to strong alkalies. The addition of formaldehyde improves the product.

About 100 parts of pyromucic acid and 50 parts of crystallized phenol are saturated with hydrochloric acid gas until a syrup is formed at that point about 3 to 10 per cent of sulphuric acid is added and thoroughly stirred into the mixture. The mass is heated under a pressure of 3 atmospheres. The pressure is obtained by means of an inert gas such as carbon dioxide or nitrogen and the heating is continued for about 3 hours at a temperature of 120 to 150 degrees C. According to the time of heating and the pressure used liquid or solid products are obtained whose content of free acid is removed by neutralization with lime or other similar alkali or else the free acid is washed out with the aid of a solvent.

Another way of carrying out this process is to treat 100 parts of pyromucic acid and 100 parts of acid tar oil and 20 to 30 parts of paraformaldehyde with hydrochloric acid gas and five parts of phosphoric acid. Condensation takes place in this way. The product is more or less fluid which after the removal of the uncondensed oil by the aid of suitable solvents gives a hard glossy black product. This material can be pressed and can also be used in the preparation of lacquers, which are soluble in alcohol, acetone and to a certain extent in benzol.

Rubber-like Compositions

German Patent No. 329,593, which is assigned to the H. Otto Traus Forschungslaboratorium G. m. b. H. of Hamburg, is concerned with certain preparations which are made from butadiene and which possess rubber-like properties to a marked degree, These are made by taking butadiene, its homologues or other similar substances or mixtures of the same or semi-polymerized products, obtained therefrom and treating them either alone or dissolved in an inert organic solvent or in the form of an aqueous emulsion at the room temperature under a pressure of 50 to 600 atmospheres. Neutral gasses, containing butadiene hydrocarbons, are compressed in a high pressure compressor or likewise neutral organic or aqueous solutions mixed with these hydrocarbons are subjected to the same pressure. The products that are obtained in this manner may be used in making various articles that are generally made from natural rubber.

NEWS OF THE INDUSTRY

Announce Results of 1921 Questionnaire

Statistics Compiled by The Rubber Association of America for the Last Six Months of 1921 Bring Figures for Total Consumption of Crude Rubber up to 154,000 Tons

The compilation of the answers to the Rubber Association questionnaire covering crude rubber consumption, value of manufactured products during the last half of 1921, also crude rubber in store in this country and afloat to United States ports on Dec. 31, 1921, has just been published. By these figures, in combination with the figures covering the first half of 1921 published last fall, it is shown that the total crude rubber consumption for 1921 was 154,280 long tons, an average of 12,856 tons per month for the entire year. During the first half of the year 58,919 tons were used—an average of 9820 tons per month. During the last half 95,361 tons were used, an average of 15,894 tons per month. It is thought that the average consumption by manufacturers during the first three months of 1922 has been slightly in advance of the last half of 1921—possibly about 17,000 tons per month.

The crude rubber consumption statistics for 1917, 1918, 1919, 1920 and 1921 show the following totals:

1917	147,613 tons
1918	*144,021 tons
1919	181,353 tons
1920	166,298 tons
1921	154,280 tons

*Estimated

The inventory of crude rubber on hand in the United States on Dec. 31, 1921, shows a total of 94,770 tons, and a total of 34,989 tons afloat to United States ports, or a grand total of 129,759 tons on hand and afloat. Since Jan. 1, 1922, there have been imported 73,198 tons. Adding this to the 94,770 tons on hand Dec. 31, we get a total of 167,968 tons as the total rubber available for consumption in this country up to April 1 last. Estimating a consumption of 17,000 tons per month or 51,000 tons for the first quarter of 1922, we have a stock of 116,968 tons remaining, an amount sufficient in itself to depress the crude rubber market greatly.

As it is not probable that all of the crude rubber in store is included in the Rubber Association figures, it is thought that about 125,000 tons is the amount available in this country at the present.

Four months supply is regarded as a normal amount of crude rubber in the hands of traders and manufacturers under normal conditions. This at the present time would be about 68,000 tons. So it will be seen that the present supplies of crude rubber are almost 100 per cent in excess of normal. With the statistical position of the market being such as outlined above it does not appear that there will be any sudden upward turn in prices for some time. The statistics compiled from the questionnaire for the second half of 1921 are in full as follows:

(Copyright, 1922, by The Rubber Association of America, Inc.)

Number of rubber manufacturers reporting data 235
Number of crude rubber importers and dealers reporting data 57
Number of reclaimers (solely) reporting data 9

Total Daily Average Number of Employes (On Basis of Third Week of July, 1921)
133,180

	Reported by Mfrs. who also reclaim (30)	Reported by Reclaimers solely (9)	Total
No. of pounds Reclaimed Rubber Produced from Raw and Cured Scrap	18,383,526	24,597,893	42,981,419
No. of pounds Scrap Rubber (including Raw and Cured Scrap) Consumed in Production of Reclaimed Rubber	24,294,659	33,155,798	57,450,457

Number of Pounds of Crude Rubber Consumed in the Manufacture of Rubber Products and Total Sales Value of Shipments of Manufactured Rubber Products

Product	Number of pounds of Crude Rubber Used		Total Sales Value of shipments of Manufactured Rubber Products	
Tires and Tire Sundries:				
Automobile and motor truck pneumatic casings	121,380,909		$222,245,268	
Automobile and motor truck pneumatic tubes	37,905,200		32,792,325	
Motorcycle tires (casings and tubes)	167,559		522,996	
Bicycle tires (single tubes, casings and tubes)	713,452		1,578,018	
All other pneumatic casings and tubes, not elsewhere specified	5,600		26,370	
Solid tires for motor vehicles	13,311,292		11,490,732	
All other solid tires	292,627		792,037	
Tire sundries and repair materials	2,588,065		5,530,389	
TOTAL—Tires and Tire Sundries		176,364,704		$274,978,135
Other Rubber Products:				
Mechanical rubber goods	10,757,733		27,021,800	
Boots and shoes	13,492,982		49,700,103	
Insulated wire and insulating compounds	1,577,618		7,263,306	
Druggist sundries, medical and surgical rubber goods	1,771,052		5,987,779	
Waterproof cloth, clothing, and rubber sheeting	1,990,341		7,735,055	
Hard rubber goods	1,289,426		2,275,785	
Heels and soles	4,004,057		7,444,064	
Miscellaneous, not included in any of above items	2,372,785		6,023,142	
TOTAL—Other Rubber Products		37,255,994		113,451,034
GRAND TOTAL—ALL PRODUCTS		213,620,698		$388,429,169

Inventory of Crude Rubber in the United States and Afloat for U. S. Ports, Dec. 31, 1921

ON HAND	Plantation (Long Tons)	Para (Long Tons)	All Other (Long Tons)
Manufacturers	55,388	3,356	9,907
Importers and Dealers	24,789	842	488
Total	80,177	4,198	10,395

Grand Total—On Hand, 94,770

AFLOAT	Plantation (Long Tons)	Para (Long Tons)	All Other (Long Tons)
Manufacturers	7,515	192	5
Importers and Dealers	25,801	1,198	218
Total	33,376	1,390	223

Grand Total—Afloat, 34,989

The total daily average of employes based on the third week of January, 1921, was 110,104. Compared with the total daily average of employes as based on the third week of July, 1921, of 133,180, it will be seen that the increase was 23,084.

The total value of manufactured goods for the entire year 1921 was $719,746,043, and of this amount the value of the tires manufactured was $506,460,740.

Revoke Licenses of 16 Ohio Rubber Companies

Licenses of 16 Ohio rubber companies, permitting them to sell stock in Ohio, have been revoked since the first of the year, Arthur L. Stewart, state securities commissioner declared on March 31.

Seven of the companies were Cleveland concerns. They were:

Owen Tire & Rubber Company; Paramount Cord Tire Company; Hubbell Tire & Rubber Company; Uncle Sam Tire & Rubber Company; McElrath Tire & Rubber Company; Ultimate Tire & Rubber Company and the Nu-Air Tire & Rubber Company.

The other nine concerns were:

Master Tire & Rubber Company, Dayton; Rayon Tire & Rubber Company, Ravenna; Security Tire & Rubber Company, Wellington; Tuscarawas Tire & Rubber Company, Dover; Portage Rubber Company, The Avalon Rubber Company and the Phoenix Rubber Company, of Akron; Andes Tire & Rubber Company, Toledo; and the Glamorgan Tire and Rubber Company.

Licenses of these companies were revoked for various reasons, according to Mr. Stewart, in a number of instances, because the companies went into receivership which is automatically followed by revocation.

Six to be Graduated in Rubber Chemistry by Akron University

The Municipal University of Akron, Ohio, through Professor H. E. Simmons, in charge of the chemical department, announces that six men will be graduated this summer in rubber chemistry.

Those who will receive their degrees in this science on June 15 are: Warren Brockett, Ravenna, Ohio; Chester Christenson, Akron; Herman Eckert, Akron; Robert Ladd, Toledo, Ohio; R. D. Lancaster, Akron, and H. Snyder, Akron.

Senate Tariff Bill Reported

Increased Protection for all Manufactured Rubber Goods Excepting Tires in Bill Reported by Senate Committee on Finance

The general tariff revision bill reported to the Senate on April 11 by the Committee on Finance increased the tariff on all lines of manufactured rubber goods, excepting automobile, motorcycle and bicycle tires which remain at 10 per cent ad valorem as in the Underwood tariff act of 1913 and the Payne-Aldrich Act of 1909. All other manufactures of india rubber and gutta percha will pay a tariff of from 25 per cent to 50 per cent. Hard rubber goods will pay 50 per cent, molded insulators and insulating materials 30 per cent and all other goods, including mechanical rubber goods (except belting made of cotton and rubber) and druggists sundries, will pay 25 per cent ad valorem.

Rubber toys and toy balloons are given protection of 70 per cent. Toy manufacturers made a special plea for protection fearing German and Japanese competition.

Following is a schedule of the principal items in which the trade is interested:

Free List

Crude rubber, guayule, gutta percha, balata, pontianak, scrap rubber, asbestos.

COTTON AND MANUFACTURES OF

	Senate bill	House bill	Underwood Law
Cotton (1⅜ inch or more) (lb.)	7c	Free	Free
Other cotton (lb.)	Free	Free	Free
Tire Fabric per cent waterproof cloth (sq. yd.)	5c+ 30 percent	5c+ 20 per cent	25 per cent
Textile Fabrics more than 20 per cent foreign matter (lb.)	32c	32c	20c
Cotton Clothing and garments not specially provided for [includes waterproof garments]	45 per cent	33 per cent	30 per cent
Belting for machinery made of cotton fabric and rubber	30 per cent	20 per cent	15 per cent

CHEMICALS AND COMPOUNDING INGREDIENTS

	Senate Bill	House Bill	Underwood Law
Acetic acid, 65 per cent (lb.)	¾c	2c	2½c
Acetic anhydrid (lb.)	5c	5c	2½c
Acetone (per cent)	6c+30 per cent	15c+30 per cent	15 per cent
Alcohols			
Methyl (gal.)	10c	15c	Free
Ethyl (gal.)	10c	15c	$2.60
Ammonium carbonate (lb.)	1½c	1½c	¾c
Aniline oil (lb.)	7c+50 per cent	7c+30 per cent	2½c+15 per cent
Barium carbonate (lb.)	1¼c	1c	15 per cent
Barytes, crude (ton)	$5	$4	15 per cent
Barytes, manufactured (ton)	$5	$4	15 per cent
Benzine	Free	Free	Free
Beta-napthol (lb.)	7c+50 per cent	7c+30 per cent	2½c+15 per cent
Blue pigments (lb.)	8c	12c	20c
Blanc fixe (lb.)	1¼c	1c	20 per cent
Black pigments (per cent)	30	20	15
Bone black (lb.)	1c	20 per cent	15 per cent
Burgundy pitch	Free	Free	Free
Carbon tetrachloride (lb.)	2½c	—	—
Castor oil (lb.)	3c	4½c	12c per gal.
Caustic soda (lb.)	½c	—	—
Chalk, ground, dry (per cent)	35	15	½c
Chalk, ground in oil (lb.)	½c	25 per cent	15 per cent
Chromium colors (lb.)	30 per cent	25 per cent	20 per cent
Cottonseed oil (lb.)	3c	2c	Free
Dimethylaniline (lb.)	7c+50 per cent	7c+30 per cent	2½c+15 per cent
Formaldehyde solution (lb.)	2c	25 per cent	1c
Fuller's earth (ton)	$1.50	$1.50	.75
Gasoline	Free	Free	Free
Glycerine, crude (lb.)	1c	1c	1c
Glycerine, refined (lb.)	2c	3c	2c
Hexamethylenetramine (lb.)	¾c	—	—
Indian Red (per cent)	25	20	10
Jute	1c	3c	1c
Linseed oil (lb.)	3½c	2½c	10c
Lamp black			
Litharge (lb.)	2½c	2⅞c	25 per cent
Lithopone (lb.)	1¾c	1½c	10 per cent
Magnesium, calcined (lb.)	¾c	¾c	Free
Naptha	Free	Free	Free
Nitric acid	Free	Free	Free
Ochers, siennas, umbers (crude) (lb.)	⅛c	¼c	5 per cent
Ochers, siennas, umbers (ground) (lb.)	⅜c	⅝c	5 per cent
Orange Mineral	3c	⅜c	5 per cent
Parraffin oil	Free	Free	Free
Peanut oil (lb.)	4c	2½c	6c a gal.
Phenol (lb.)	7c+50 per cent	7c+30 per cent	2½c
Pyrogalic acid	12c	25c	12c
Rapeseed oil (gal.)	6c	1½c lb.	6c
Silica (ton)	$4	$4	Free
Soda ash			
Soya bean oil (lb.)	3c	2c	Free
Sulphuric acid	Free	Free	Free
Sodium carbonate (lb.)	⅛c	¼c	Free
Thiocarbanilid	7c+50 per cent	7c+30 per cent	2½c+15 per cent
Ultramarine blue (lb.)	4c	3c	15 per cent
Venetian red (per cent)	25	20	10
Vermillion red (lb.)	28	33	15 per cent
Zinc oxides, not more than 25 per cent lead, dry (lb)	¾c	—	—
Zinc oxides (dry) (lb.)	1¾c	1½c	10 per cent
Zinc oxides, ground or mixed with oil or water (lb)	2¼c	2c	15 per cent

Tubings, garters suspenders, braces and cords made of cotton and rubber	40 per cent	25 per cent	25 per cent
(do) Made of silk and india rubber	55 per cent	33 1/3 p. c.	45 per cent
Golf balls, tennis balls and footballs	45 per cent		
Toys (rubber) and toy balloons	70 per cent	40 per cent	35 per cent
Tires, automobile, motorcycle and bicycle	10 per cent	10 per cent	10 per cent
Manufactures of india rubber and gutta percha not specially provided for	25 per cent	10 per cent	10 per cent
Vulcanized hard rubber goods	50 per cent	30 per cent	25 per cent
Molded insulators and insulating materials	30 per cent	30 per cent	10 per cent

Personal

B. G. Work, president of the B. F. Goodrich Co., returned to New York from a six-weeks European trip on the Homerie April 13.

* * *

Ray Hamilton, who had been joint manager with John Swett of the crude rubber department of W. R. Grace & Co., New York, resigned March 31. Mr. Swett remains as the sole manager of the department.

* * *

Fred B. Peterson, the crude rubber importer and dealer of 7 Water Street, New York, sailed on April 3 for Rotterdam, Holland. He will visit the rubber centers in Holland, Germany and England before returning to this country in June.

* * *

Dr. S. P. Woodward, president of the new Stanwood Rubber Co., Elizabeth, N. J., and 1819 Broadway, New York, left in February for a trip around the world. He is visiting the rubber producing countries in the Far East and will return in June.

* * *

John L. Handy of French & Handy, Inc., the crude rubber dealers of 347 Madison Avenue, New York, arrived in New York on April 10 from his trip to Singapore and the rubber districts of the Far East. He had been away since last September.

* * *

Joseph Abercrombie who has been connected with the Rubber Association of America for the past seven years resigned on April 1 last and will engage in the hardware business in White Sulphur Springs, Sullivan County, New York .

Mr. Abercrombie's services to the industry during the period of the war will be well remembered by nearly everyone in the trade. He had active charge of the department of crude rubber guarantees by which the association certified to the British government the distribution to American manufacturers of British-grown rubber imported into the United States. This work involved a great amount of detail which Mr. Abercrombie coped with successfully.

Harry Grubb and Paul Walker Join the Victor Rubber Co.

Harry A. Grubb, after twelve years of wide experience in sales management in the tire industry, has accepted the position of assistant general manager, in charge of sales for the Victor Rubber Company, Springfield, Ohio.

The application of Mr. Grubb's tire

HARRY A. GRUBB

merchandising experience is being applied to Victor's selling plans and has already resulted in the formulation of an aggressive selling program, calling for the increased distribution of Victor tires and tubes through the better class of established tire distributors and merchants.

With headquarters at Springfield, Ohio, Mr. Grubb will be assisted by A. L. Feick, formerly with the Oldfield Tire Company, who will continue with Victor as sales promotion and advertising manager.

Paul R. Walker, after many years of sales work with the Firestone and Oldfield companies, has also joined the Victor Rubber Company as a special representative. Walker's efforts will be along the lines of extensive sales work and assistance to the Victor field force.

Binney & Smith Company Moves Uptown to Larger Quarters

A striking evidence of the rapid strides forward made by the well known house of Binney & Smith Company, manufacturers, exporters and importers of blacks, colors, clays, chemicals and talc, is seen in the announcement that this progressive firm will shortly move into much larger quarters.

On and after June 1 Binney & Smith Co. will be at home on the 19th floor of the Liggett Building, corner of Madison Ave. and 42nd Street. It is a decided innovation for a business of this character to move its executive offices into this rapidly developing section, but it is in keeping with the policy of this house to lead the way when better service and greater convenience to customers is concerned.

For over a score of years Binney & Smith Co. have been located at 81-83 Fulton Street, New York City. During this time the business has grown enormously. Their activities have been repeatedly enlarged until now they produce practically every type and grade of black pigment used in the arts and sciences.

In addition, the departments manufacturing oxides, clays, tales, etc., have grown, and that part of the business which manufactures crayons, chalks and water color paints is also rapidly expanding.

They have accordingly outgrown their space at their present location and have taken adequate steps to meet the increasing demands of their business.

At their new location the Binney & Smith Co. feel they will be more accessible to the various lines of trade served by them and will be especially convenient to out of town customers when they visit New York.

National India Rubber Company Elects Officers at Annual Meeting

George Schlosser of Woonsocket, R. I., was elected president of the National India Rubber Company, Bristol, R. I., at the annual meeting of the stockholders and directors held March 28. Mr. Schlosser, who was also re-elected as general factory manager, had been vice president of the corporation. He succeeds the late Samuel P. Colt as president.

Homer E. Sawyer of New York, who is vice president in charge of the footwear division of the United States Rubber Company was chosen vice president of the National India Rubber Company in Mr. Schlosser's stead.

Other officers chosen included: Secretary and treasurer, M. C. Smith, Jr.; assistant secretary, John D. Carberry; assistant treasurer, Lester K. Munroe; board of directors, George Schlosser, Walter S. Ballou of Providence, Homer E. Sawyer of New York, Charles A. Emerson of Providence, James Harris of Providence and George H. Mavo, E. J. Coughlin, C. B. Seger of New York. Mr. Seger is president of the United States Rubber Company.

Goodyear Subsidiary Reduces Deficit

The Goodyear Tire & Rubber Co. of California, a subsidiary of the Goodyear Tire & Rubber Co., Akron, Ohio, with net earnings for ten months ending Dec. 31, 1921, of $1,485,309 reduced its deficit $3,157,762 to $1,672,453, according to an announcement made March 23 by E. G. Wilmer, president of both companies.

Total net sales of the California company for 1921 were $14,333,500 as compared with $16,128,850 in 1920. In terms of units, however, 1921 sales exceeded those of 1920.

National Aniline & Chemical Company, Inc., to Move

The National Aniline & Chemical Co., Inc., many of whose products are used in the rubber industry, will move on May 1 from 21 Burling Slip to 40 Rector street, New York. All communications should be addressed to the company at the new location.

PAUL R. WALKER

Mill Notes

The Ashland Tire & Rubber Co., Ashland, Ohio, which resumed recently is increasing its output.

* * *

The plant of the Armorcord Rubber Company at Morgantown, West Virginia, was reopened on March 20 by the Rubber Production Corporation after having been shut down for more than a year.

* * *

The sales department and general offices of the Thomas Tire & Rubber Co., Millersburg, Ohio, were recently moved to a new location in that town. The rapid growth of business of that company made the removal necessary in order to make room at the plant for additional equipment.

* * *

The Tuscan Tire & Rubber Co., Carrollton, Ohio, although not working full time in its tire department, which is, however, increasing its output for spring and summer trade, is working to capacity in its rubber sundry department.

* * *

The Seamless Rubber Company, New Haven, Conn., which has been granted a permit to erect a new building to replace that destroyed by fire about two months ago, will build a brick structure 140 ft. across the front with a depth of 122 by 160 ft. The building, which is to cost $75,000, will be heated by steam from the main plant.

Explosion Hazards in Solvent Recovery

To the Editor, The Rubber Age:

On Jan. 10 you published a communication from P. Wilcox Gumaer in regard to C. B. Mitchella's article of Nov. 25 on the explosive hazards of solvent vapors. This article pointed out that when an enclosed chamber contains 90 per cent to 100 per cent pure gasoline vapor the leakage of a given amount of air into the chamber is much less dangerous than when the enclosed chamber contains 5 per cent to 10 per cent gasoline vapor and the balance air. Definite figures were given to prove this statement.

Mr. Mitchella in a reply published in your issue of March 10 does not attempt to refute the figures given, but criticizes my article published in your issue of Nov. 10 on solvent recovery.

Mr. Mitchella gives his own definition of the phrase "Highly concentrated vapors" stating "Highly concentrated vapors I consider a mixture above the explosive range." The explosive range of gasoline vapor and air is between 2.8 per cent and 4.4 per cent of gasoline vapor. I do not know of any chemist who would consider a 2.8 per cent or even a 4.4 per cent mixture of any gas a *highly* concentrated mixture.

Next Mr. Mitchella makes what he calls a very broad statement: "So long as human beings are delegated to operate solvent recovery apparatus under present methods we shall have explosions." This statement is correct within limits. It is likewise true that as long as human beings are delegated to operate railway locomotives under present methods we shall have railway wrecks and loss of life. How many of us refuse to ride on the railroads because of a possible wreck? This is because with modern equipment and careful operation the probability of any individual being caught in a wreck is extremely small. The problem for the engineer or the factory manager is not to condemn all solvent recovery equipment but to select the one with the smallest hazard. The thesis of my criticism of Jan. 10 was that when a mixture of air and gasoline vapor containing 90 per cent to 100 per cent gasoline vapor is used, the risk of explosion is far less than when a mixture containing 5 per cent to 10 per cent gasoline vapor is used.

In his article of March 10 Mr. Mitchella criticizes solvent recovery methods in general although he graciously says that our machine may recover solvents more efficiently than any other. Although his statements do not bear upon the original discussion it would not be fair to ourselves or to the readers of the RUBBER AGE to let these criticisms go unanswered.

In all engineering work the ultimate criterion of the success or failure of any device or process is the result obtained in actual operating experience. Mr. Mitchella has evidently had no experience with the operation of our solvent recovery method and he bases his criticism on a brief and—it must be admitted—incomplete explanation of the operation of the solvent recovery apparatus as given in THE RUBBER AGE of Nov. 10. For his enlightenment and for the benefit of any of the readers who may have given undue weight to his criticism, we venture to impose upon the reader a list of firms which have been using this method of solvent recovery for years. In fact a number of these plants have been using our solvent recovery method for eight years. In none of these plants has there occurred during this period of operation a single serious explosion or fire on machines using this solvent recovery method. Furthermore, these firms report that the damage caused by minor fires has been *reduced* by the installation of the solvent recovery equipment. The reader can confirm any of these statements by writing to the firms given below. It will be noted that American firms using this method of solvent recovery apparatus are not included in this list. This is because none of the machines in this country have been in operation for five years. The firms are as follows:

National Union Rubber S. A., Paris; James Walker & Co., London; W. T. Henleys Telegraph Works Co., London; Wm. Warne & Co., Ltd., London; Holland Draad-en Kabelfabrik, Amsterdam, Holland, Gummi-und Balatawerk Matador, Pressburg, Hungary; E. Bloch & Sohne, Brunn, Austria; Gummiwarenfabriks, A-G., Budapest Hungary; Capamianto Soc. An., Turin, Italy; Wilhelmi & Co., Hoogezand, Holland; Bakker & Zoon Ridderkerk, Holland; Rubberfabrik Vredestein, Loosduinen, Holland; Schionning & Arve, Copenhagen, Denmark; Trolleborgs Gummivarenfabrike, AB, Trolleborg, Sweden; Max Sieverts AB, Stockholm, Sweden; Colonial Rubber Soc. An., Ghent, Belgium; Continental Soc. An. Clichy, France; DeGrave & Prouvost, Roubaix, France; Suomen Gummitehdas Osakeyhtic, Nokia; The Cape Asbestos Co., London, England; Deutsche Dunlop Gummi Co., Tokio, Japan; Fabriks A-B Eris, Stockholm, Sweden; Liljeholmens Kabelfabrik, Stockholm, Sweden; Norsk Kabelfabrik, Drammen, Norway; The Northern Rubber Co., Retford, England; Gummifabriken Reo, Halmstad, Sweden; Varnamo Gummifabrik, Varnamo, Sweden; Elektriska AB., Chr. Bergh & Co., Malmo, Sweden; R. Alliot Rol & Co., Paris; Hutchinson & Co., Paris; E. Kubler & Co., Berlin-Reinickendorf; Deutsche Dunlop-Gummi-Co., Hanau, Germany; Pahl'sche Gummi-und Asbest-G. m., b, H. Dusseldorf-Rath, Germany; Suddeutsche Kabelwerke, Mannheim, Germany; Deutsche Kabelwerke, A-G, Berlin, Germany; Akt.-Ges Metzeler & Co., Munchen, Germany; G. & A. Thoenes, Radelbeul-Dresden, Germany; Neumann & Bocler, Hamburg, Germany; Kolnische Gummifadenfabrik, Deutz, Germany; Hessische Gummiwaren-Fabrik Fritz Peter, Klein-Auheim, Germany; Asbest-und Gummiwerke Alfred Calmon, A-G., Hamburg, Germany.

Normally this solvent recovery apparatus contains a mixture which is approximately 90 per cent solvent vapor and the balance air. At the start of operation the machine contains all air. Mr. Mitchella raises a question of what would happen if a spark occurred within this apparatus at the instant when the mixture passes though the explosive range. In reply to this question we submit a complete unbiased report by a German Fire Insurance authority. This report naturally discusses the explosive hazard under the theoretical worst possible conditions.

RENDERING INNOCUOUS THE BENZINE GASES IN RUBBER FACTORIES

By Chief Inspector Blunck Kiel

(From Mitteilungen fur die offentlichen Feuerversicherungs-Anstalten Vol. 47, p. 124-6. Translated by the Engineering Socities Library.)

In rubber factories rubber is dissolved in benzine in order to bring it to a plastic consistency. For this purpose it is mixed with benzine in special apparatus, and then reaches the various machines in which the plastic mass is combined with the substance serving as base. This process is carried out by the application of heat. In this the benzine evaporates. Its gases spread in the work rooms, mix with atmospheric air and form an easily exploding mixture. As the gases are heavier than atmospheric air, they at first do not trouble the workers and are not noticed. Only gradually the upper airlayers become also impregnated with benzine gases. Inhaling the gases causes great trouble as regards the health of the workers.

This doubly injurious effect of benzine gases it has been endeavored to obviate hitherto by thoroughly airing the work rooms or by drawing off the benzine gases appearing at the machine direct by exhaust devices and conducting them into the open. However, such an arrangement was by no means perfect. The benzine gases were removed from the work rooms, it is true, but with them also went the benzine they contained. The high prices of benzine created a strong desire to remedy this defect, and to put to use again the benzine evaporated.

About a year ago an invention, protected by a patent, was placed on the market, which makes it possible to eliminate the dangers appearing in rubber manufacture and at the same time to recover the benzine evaporated for new uses. Recovery takes place by condensing similarly as in benzine degreasing installations. By a clever arrangement of the apparatus the danger of fire and the injurious effect to health of the benzine gases are both eliminated simultaneously by condensing.

The machines (spreaders, calenders) are closed in by means of a gas-tight housing in so far as the rubber mass worked on the machine comes in contact with atmospheric air. By a suitable water cooler provided the benzine gases resulting in the working process are cooled and are precipitated on the floor of the housing as liquid benzine, whence they are led back to the benzine tank by means of closed piping. The piping is run on an incline, and besides, is made secure against flames bursting through by devices built in.

Very simple and ingenious also is the provision in the apparatus, for removing the danger of flames appearing in the machines. Quite correctly the view point was taken as a starting point that at present we are not in a position to prevent formation of flames and explosions in the machines; the object was therefore mainly to counteract their spreading and their injurious consequences.

For this purpose the inventor provided on the upper half of the housing safety valves which are raised when an explosion occurs, but return to their former position after the explosion and thus re-establish the gas-tight enclosure. In this manner an explosion occuring in the housing takes its course without doing any harm.

It may be of interest to follow up the operation of such a benzine recovery apparatus in a practical example.

In a sheeter calender for sheet packing the steam heated roller and the cold roller are side by side on an iron frame. Both rollers are closed in by a gas-tight housing, carrying a water cooling arrangement in its lower half. On the upper part are located the safety valves already described. These valves are arranged on hinges so that they can be turned horizontally and provided with a regulating chain which prevents undue striking back of the valves. The inspection window, situated on the side of the feed valve turned toward the feed station is loosely put in, and provided with a stop, also serves as a safety valve. To the water supply connection a cooling water line is connected. The lower part of the housing is connected by means of a pipe line with the benzine tank in a fire proof structure outside the building. In the return piping narrow mesh screens have been built in, which impede the spreading of the flames.

When the mass to be worked is put on the rollers and the machine is turned, the rubber mass is brought into constant motion by rotation of the rollers, and becomes warm from the heated roller. Owing to heating, benzine evaporates very quickly. The gases collect inside the housing and due to their own weight sink to the bottom, where they are cooled and condensed to liquid benzine. From there the benzine flows back through the piping into the benzine tank. During operations the feed valves must of course be kept closed.

To obtain a picture of the course of an explosion, it should be noted that at the beginning of rolling there is atmospheric air in the housing. As soon as evaporation begins, a benzine air mixture forms which is explosive within the limits of 2.8 to 4.4 per cent benzine gas.

If at such a benzine content there appears spark formation, an explosion will take place, which opens the feed and safety valves and thereby renders the explosion harmless. The explosion puffs out and as soon as this has happened the safety valve returns automatically to its former position. The housing is again tight, as at the beginning. But as soon as the enclosure is reformed, the conditions favorable to further burning of the benzine gases within the housing have ceased to exist. The flame dies out because the oxygen in the air cannot enter. If a new ignition and explosion follows, it will run its course like the first one. If, however, the feed valve should unintentionally remain open, the benzine gas would quietly burn out. And explosion cannot then take place because the necessary mixture for it is not present.

The danger has therefore been actually removed,

and this is confirmed by the fact that with enclosed apparatus none of the otherwise usual phenomena has occurred.

It might be thought that during continued operation of the machine pure benzine vapor would accumulate in the housing and the atmospheric air would as a consequence of heating of the contents of the housing, be gradually forced outside or consumed, if an explosion occurs without being renewed. This is not the case. By cooling, which is constantly effective, and the consequent limitation of the volume, a thin dilution of the gases contained is produced in the housing. As a consequence of this there will be a slight drawing in of atmospheric air, so that a certain benzine air mixture comes about in any case. Besides through the feed valve which must be opened now and then to feed in the mass, outside air will enter.

After what has been said above it would make no difference whether there is pure benzine gas or air mixture within the housing. In the first case this gas, if ignited from outside through the feed valve, would quietly burn out and by closing the feed valve the fire could be smothered. In the second case some times an explosion may occur which then takes its course as stated above.

But the most important achievement for industry which this improvement represents is the recovery of the evaporated benzine. In one apparatus up to 85 per cent were recovered, 10 per cent as a rule remained in the finished material and gradually escaped in the air, 5 per cent are lost in any case during operations. This gain will assure the adoption of this apparatus by the industries.

Besides the two advantages over current installations mentioned the apparatus has also good points from the health point of view. The work rooms are freed from the noxious benzine gases and to such an extent that almost no benzine odor can be noticed any more in them. The condensing is effective to such an extent that with the feed valve open one may observe that the benzine vapors cannot rise above the rim of the opening, they curl and are permanently drawn downward.

This improvement deserves the widest adoption. It will be the more easily introduced, because with its installation a visible benefit is connected, the recovery of the benzine."

I believe that the above answers all the criticisms stated or implied concerning the fire or explosion hazards as regards the solvent recovery apparatus in question. Such questions concerning the details of operation of the apparatus: as, for example, why the "dope" enclosed within the apparatus in a vapor of gasoline does not dry out, cannot be answered here as they do not refer to solvent recovery hazard.

P. WILCOX GUMAER
President, Benzine Condensation Co., Inc.

Corrugated Rubber Corporation To Make Tubes

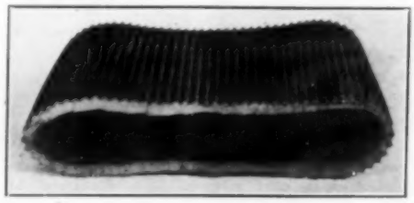
The Corrugated Rubber Corporation has been organized with a capitalization of $1,500,000 to manufacture the Corrugated inner tube by the Fairchild patented process.

The main offices of the corporation are at 25 West Forty-third Street, New York City, and the plant is to be located at Poughkeepsie, N. Y., where a site has already been obtained. Plans for a factory building, 200 x 80 feet, have been prepared and estimates of cost secured. It is planned to begin active production within ninety days from the date of awarding contracts for construction. The plant will have a capacity of 200,000 inner tubes per year.

W. L. Fairchild, inventor of the process to be employed, will be actively associated with the corporation as vice president, and F. W. Gaver, consulting chemist, will have complete charge of the new plant. Dr. C. O. Mailloux, president of the International Electrical Commission and ex-president of the American Institute of Electrical Engineers, will act in a consulting capacity.

The Edward A. Cassidy Co., Inc., 25 West 43rd street, New York, national distributor of automotive products, is the exclusive sales representative of the Corrugated Rubber Corporation throughout the United States.

The Corrugated inner tube produced by the Fairchild process is molded in a perfect ring, oval in cross-section, without splices, seams or creases. The valve is vulcanized directly into this ring and thoroughly reinforced. Circumferential corrugations maintain air spaces between the tube and the casing, preventing overheating and "freezing." Uniform distribution of material insures equality of inflation and pressure in the tube. Other



CROSS SECTION OF CORRUGATED TUBE

advantages are that it floats free from the rim before inflation, preventing pinching. No vulcanizing accelerators are used in its production, so that elasticity is preserved and longer life assured. Corrugated tubes are made in only five operations, as compared with eighteen or twenty ordinarily required. Extra heavy red antimony rubber is used. All tubes are made to conform to Government specifications covering thickness of wall, tensile strength and elastic limit. It is claimed for the Fairchild process that it produces only first quality tubes—no "seconds."

The process consists of the following:

The rubber is first broken down, made soft and compounded with antimony. It is then put through a tubing machine, adjustable as to size and thickness, which turns it out in a round tube like a sausage casing. It is in plastic form, but firm enough to be easily handled and shaped. It is cut to length of tube required and transferred to the assembling room. Here it is bent in a circle and formed: Valve, inner ring and base patch are inserted from inside of tube, the ends are then joined and kneaded together, adding outer base patch.

The tube is now completely formed while the rubber is soft, just as a doughnut is cut from dough, and is ready for baking. It is then placed in a vulcanizing machine and as heat is applied to the outside and high-pressure, hot vulcanizing gas automatically to the inside of tube, the vulcanization requires but twenty minutes as against seventy minutes with the old process. The machine is opened, the tube removed, all finished and ready for testing and packing.

The officers of the Corrugated Rubber Corporation are: G. B. Gosman, chairman of the board of Edward A. Cassidy Co., Inc., president; W. L. Fairchild, consulting engineer, Times Building, New York, vice president; Avery McDougall, G.P.A., secretary and treasurer; and F. W. Gaver, chemist and superintendent of production; B. F. Taylor, general manager.

The board of directors consists of: L. M. Lloyd, president, Edward A. Cassidy Co., Inc.; A. W. Snow, vice president and cashier Garfield National Bank; W. L. Fairchild, C. O. Mailloux, consulting engineer, 111 Fifth Avenue, New York, president International Electrical Commission, former president of the American Institute of Electrical Engineers; G. B. Cosman and Avery McDougall.

Annual Meeting of the Gutta Percha & Rubber Mfg. Co.

At the annual meeting of the stockholders and the board of directors of the Gutta Percha & Rubber Mfg. Company, held April 5, the following were elected as officers to serve for the ensuing year: Henry Spadone, president; Amédée Spadone, vice president; F. E. Miller, vice president; Alfred A. Spadone, secretary; Geo. B. Dickerson, treasurer and assistant secretary.

W. W. Spadone, who has held the position of vice president of the company for some fifteen years has taken the presidency of their allied corporation, the Spadone Machine Company, Inc., manufacturers of the Bolton Bias Cutter. This business has so greatly increased in the past two or three years that it has been found necessary to organize a much larger staff to properly attend to it. W. W. Spadone was chosen for its president because he has had so much to do with its operation. He retains his interest in the Gutta Percha & Rubber Mfg. Co. and remains on its board of directors.

Amédée Spadone and F. E. Miller, the new vice presidents, have been associated with the company for many years, Amédée Spadone in the New York office and Mr. Miller in charge of the Western business with headquarters at Chicago.

The retirement of W. W. Spadone from the list of officers will in no way affect the manufacturing departments because these are in the hands of the same departmental heads who have been in the company's employ for a great number of years and will be hereafter responsible for the excellence of their Maltese Cross, Sagamore and other brands of goods, as heretofore.

Erie Tire Co. Earns Profit

The Erie Tire & Rubber Co., Sandusky, Ohio, thrown into receivership over a year ago, earned a net profit of $51,560.05 for the year ending January 31, 1922, according to the profit and loss statement.

Total sales of $662,726.72 with a gross profit on sales of $125,596.75 are reported by the receiver. Selling expenses aggregated $57,486.53, leaving a net profit on sales of $68,110.22. Discount and interest earned and rentals totalled $3,332.24. Idle expense, receivership costs, profit and loss sundries and loss on restaurant operation totalled $19,882.41, showing a net profit of $51,560.05.

Rubber Exports from Brazil and Peru for 1920 and 1921

(By American Consul George H. Pickerell, Para, Brazil, Dec. 31, 1921.)

The following table is a comparative statement of exports of rubber and caucho to the United States and Europe from Para, Manaos, and Itacoatiara, Brazil and Iquitos, Peru, for the years 1920 and 1921:

	To United States 1920 pounds	To United States 1921 pounds	To Europe 1920 pounds	To Europe 1921 pounds
PARA				
Fine	8,133,806	5,638,403	7,931,679	5,343,934
Medium	633,770	627,281	548,468	245,099
Coarse	5,325,843	2,579,480	655,774	356,020
Caucho	4,690,083	1,606,872	2,129,252	1,713,449
	18,783,502	10,452,036	11,265,173	7,658,502
MANAOS				
Fine	7,857,152	7,960,821	8,680,294	5,379,164
Medium	1,329,269	962,304	787,645	403,379
Coarse	2,726,745	1,488,720	883,520	458,400
Caucho	4,928,038	3,659,540	1,721,830	1,905,580
	16,841,204	14,071,385	12,073,289	8,146,523
IQUITOS				
Fine	2,764,119	150,864	85,750	139,248
Medium	142,873	4,204	5,745	2,063
Coarse	318,988	12,246	20,307	13,897
Caucho	765,242	48,232	31,676	145,379
	3,991,222	215,546	143,478	300,587
ITACOATIARA				
Fine	123,805	—	20,634	52,734
Medium	8,283	—	397	353
Coarse	68,292	—	1,543	22,861
Caucho	53,016	—	352	13,448
	253,396	—	22,926	89,396
TOTALS	39,869,324	24,738,967	23,504,866	16,195,008

Total for 1920 63,374,190 lb. or 28,746 Tons (met).

Total for 1921 40,933,975 lb. or 18,567 Tons (met).

Decrease for 1921 22,440,215 lb. or 10,179 Tons (met).

The following table shows total exports of crude rubber from Para and Manaos, Brazil during December, 1921:

	To Europe lb.	To United States lb.
PARA		
Fine	1,133,706	348,592
Medium	27,436	36,184
Coarse	61,291	367,497
Caucho	106,240	178,270
	1,328,673 lb.	930,543 lb.
MANAOS	lb.	lb.
Fine	1,019,452	955,064
Medium	110,383	78,740
Coarse	46,359	130,666
Caucho	97,245	348,149
	1,273,439 lb.	1,512,619 lb.
TOTALS	2,602,112 lb.	2,443,162 lb.

Total shipments during December 1921 ..... 5,045,274 lb.

Total shipments during December 1920 ..... 4,851,649 lb.

Increase during month of December 1921 ..... 193,625 lb.

Viscount Grimston Sheds Coat to Build Tire at Miller Plant

Viscount Grimston, head of the Industrial Rubber Products Co., London, England, who with E. D. Burley recently visited Akron, Ohio, proved on March 29 that he knew all about tire building when he shed his coat at the plant of the Miller Rubber Company, laid his glasses aside, carefully rolled up his sleeves and applied the tread on a partly-finished tire.

The English lord, who is the son of the Earl of Verulam, has been a tire manufacturer for a number of years. In addition he is the representative of the Miller Rubber company in England.

Announce New President for A. Schrader's Son, Inc.

A. Schrader's Son, Inc., of Brooklyn, New York, announced on April 3 that M. Charles Schweinert. who has for over thirty-five years been associated with it in various capacities, such as general manager, treasurer, director, and president, has resigned his official position with the company. Mr. Schweinert has, however, because of his wide knowledge

HENRY P. KRAFT

of the corporation's business and his engineering and mechanical skill, been retained by the corporation in an advisory capacity.

As Mr. Schweinert's duties in such capacity will occupy only a portion of his time, he contemplates devoting the remainder of it to other engineering and mechanical matters and to looking after his private interests.

Henry P. Kraft, vice-president and treasurer, who has been associated with the Schrader company for the past thirty-nine years, succeeds Mr. Schweinert as president of the company.

This firm has been in business since 1844, and in addition to the manufacture of diving apparatus of all kinds, is one of the largest manufacturers of automobile accessories.

Charles E. Waelde, U. S. Rubber Salesman for 50 Years, Dead

Charles E. Waelde, aged 69, a salesman of rubber goods for the United States Rubber Company for 50 years, having joined the sales force of that firm when it was the Cleveland Rubber Company in 1871, died at Eustus, Florida, on March 11.

C. A. Hemingway Joins Wishnick-Tumpeer Chemical Co.

The Wishnick-Tumpeer Chemical Co., Chicago, announces the addition to their sales force of C. A. Hemingway, who will work in the Ohio territory. Mr. Hemingway is a former Firestone man, having formerly been connected with the manufacturing and sales departments of that company for a period of ten years. It is Mr. Hemingway's intention to make a trip through Ohio in the near future.

March Crude Rubber Importations

Figures compiled and distributed by The Rubber Association of America, Inc., 52 Vanderbilt Ave., New York City

(Estimated net weights—long tons)

PLANTATIONS

From	Tons
Batavia	1,571
Belawan-Deli	1,418
Cochin	38
Colombo	2,049
London	864
Malacca	850
Penang	1,540
Pt. Dickson	4
Pt. Swettenham	159
Rotterdam	46
Singapore	11,823
Sourabaya	915
Tandjong Priok	244
	21,521

MANICOBA & MATTO GROSSO

	Tons
Matto Grosso	57

GUMS, WASTE RUBBER, ETC., IMPORTED FROM VARIOUS SOURCES

	Tons
Waste	61
Balata	17
Miscellaneous Gums	479

AFRICANS

From	Tons
Lisbon	286
Marseilles	40
	326

CENTRALS AND GUAYULE

Centrals (Mexico and Central America)	3
Guayule (Mexico)	—
	3

PARAS

Iquitos	53
Manoas	250
Para	148
	451

COMPARISON 1921 - 1922

	Mch.-1921	Mch.-1922	Total Importations 3 months ending, Mch. 31. 1921	1922
Plantations	12,241	21,521	32,973	69,565
Paras	1,794	451	3,538	2,714
Africans	377	326	689	788
Central	1	3	6	33
Guayule	—	—	25	—
Manicoba and Matto Grosso	3	57	3	98
	14,416	22,358	37,234	73,198

ARRIVALS PLANTATIONS FOR MARCH, 1922, SHOWING PORTS OF ORIGIN AND ARRIVAL

From	Arrived at	Tons
Batavia	New York	1,571
Belawan-Deli	New York	1,418
Cochin	New York	38
Colombo	Boston	73
Colombo	New York	1,976
London	New York	864
Malacca	New York	850
Penang	New York	1,540
Port Dickson	New York	4
Port Swettenham	New York	159
Rotterdam	New York	46
Singapore	New York	11,679
Singapore	Boston	144
Sourabaya	New York	915
Tandjong Priok	New York	244
		21,521

ARRIVALS OF PLANTATIONS BY PORTS

Atlantic Ports	
New York	21,304
Boston	217
	21,521

Rubber Trade Associations

Rubber Association of America, Inc.

52 Vanderbilt Avenue, New York.
Telephone: Murray Hill 5028
President: Harry T. Dunn, Fisk Rubber Co., New York.
General Manager and Secretary: A. L. Viles.

Rubber Association Divisions

TIRE MANUFACTURERS' DIVISION

Chairman: Joseph C. Weston, Ajax Rubber Co., Inc., New York.

FOOTWEAR DIVISION

Chairman: George H. Mayo, United States Rubber Co., New York.

MECHANICAL RUBBER GOODS MANUFACTURERS' DIVISION

Chairman: C. E. Cook, The B. F. Goodrich Co., Akron, Ohio.

RUBBER SUNDRIES MANUFACTURERS' DIVISION

Chairman: H. A. Bauman, The B. F. Goodrich Co., Akron, Ohio.

RUBBER PROOFERS' DIVISION

Chairman: J. H. Mason, The Duratex Co., Newark, N. J.

RUBBER CLOTHING MANUFACTURERS' DIVISION

Chairman: N. Lincoln Greene, United States Rubber Co., Boston, Mass.

RUBBER RECLAIMERS DIVISION

Chairman: Clark W. Harrison, Bloomingdale Rubber Co., New York.

HARD RUBBER MANUFACTURERS' DIVISION

Chairman: Harry Weida, India Rubber Co., New Brunswick, N. J.

RUBBER & FABRIC SOLE MANUFACTURERS' DIVISION

Chairman: Clifford H. Oakley, Essex Rubber Co., Trenton, N. J.

FOREIGN TRADE DIVISION

Chairman: F. E. Titus, International B. F. Goodrich Co., Akron, Ohio.

Rubber Heel Club of America

370 Atlantic Avenue, Boston, Mass.
Chairman: Robert H. Cory, O'Sullivan Rubber Co., New York.
Secretary: George A. Stetson, Boston.

Wire & Cable Section of the Associated Manufacturers of Electrical Supplies

30 East 42nd Street, New York.
Telephone: Vanderbilt 4702
Chairman: LeRoy Clark, Safety Insulated Wire & Cable Co., New York.
Secretary: C. E. Dustin.

Rubber Trade Association of New York, Inc.
(Members Consist of Crude Rubber Importers, Dealers and Brokers).

75 Maiden Lane, New York.
Telephone: Beekman 6878
President: Francis R. Henderson of F. R. Henderson & Co., Inc.
General Manager: John P. Sullivan

Motor & Accessory Manufacturers' Association, Inc.

33 West 42nd Street, New York.
Telephone: Longacre 8380
President: Edward H. Broadwell, Fisk Rubber Co., Chicopee Falls, Mass.
General Manager: M. L. Hemingway.

Tire & Rim Association

Leader-News Building, Cleveland, Ohio.
Chairman of Executive Committee: S. P. Thacher, United States Rubber Co., New York.
General Manager: C. E. Bonnett

Rubber Association of Canada

808 Royal Bank Building, Toronto, Canada.
President: W. A. Eden, Canadian Consolidated Rubber Co., Ltd., Montreal.
General Manager and Secretary: W. A. Hannay.

National Association of Waste Material Dealers

Times Building, New York.
Telephone: Bryant 1318
Chairman of the Scrap Rubber Division: Nat. E. Berzen, New York
Secretary and Treasurer: Charles M. Haskins

Mid-West Rubber Manufacturers' Association

607 South Wabash Avenue, Chicago, Illinois.
Telephone: Wabash 6677
President: W. W. Wuchter, Nebraska Tire and Rubber Co., Omaha, Neb.
General Manager and Secretary: Charles S. Sutherland

Rubber Manufacturers' Association of New Jersey

President: Charles E. Stokes, Home Rubber Co., Trenton, N. J.
Secretary: W. H. Sayen, Mercer Rubber Co., Hamilton Square, N. J.

Rubber Association of Philadelphia

President: C. D. Garretson, Electric Hose & Rubber Co., Wilmington, Delaware
Secretary: D. P. Morgan, Gustin-Bacon Manufacturing Co., 1021 Filbert Street, Philadelphia, Pa.

Rubber Club of San Francisco

President: J. B. Brady, United States Rubber Co., San Francisco, California.
Secretary: C. W. Jackson, Miller Rubber Co., 21 Van Ness Ave., San Francisco, California

ENGLAND

Rubber Growers' Association, Inc.

38, Eastcheap, London, E. C.
Chairman: Sir Stanley Bois
Secretary: Frank G. Smith

Rubber Trade Association of London
(Members Consist of Crude Rubber Importers, Dealers and Brokers).

6, Mincing Lane, London, E. C.
Chairman: H. B. Figgis
Vice Chairman: William Symington
Secretary: William G. Briggs

MARKETS

Cottons and Fabrics

NEW YORK, APRIL 11, 1922

The main interest in cotton centers is the prospects for this year's crop. It is a little early for anything definite to be known but there is disquieting talk of planting being backward and that the amount of fertilizers being used is too small to assure a large crop. It will be another month before definite facts can be known with respect to conditions that have a direct bearing on acreage and possible yield; yet speculation as to the new crop seems of more interest even at this time than present spinners demands or existing stocks. In this regard it is interesting to note that an important factor in the trade says that it is safe to assume that there are no large stocks either of raw or manufactured cotton now held by European spinners and that in estimating future markets it is well to remember that during five years of war two great cotton consuming countries, Germany and Russia, were entirely cut off as factors in supplying the world's requirements of manufactured cotton. And furthermore the output of the English and French mills was also greatly reduced, so far as general commerce was concerned, during that period.

Current estimates of actual consumption of American cotton are much larger than last year's notwithstanding the labor troubles in New England. With two-thirds of the cotton year a matter of record the year's consumption and exports can be estimated at 12,000,000 bales; which means after deducting the present crop a reduction of at least 4,000,000 bales of the carry over. Should the new crop only equal last year's yield there would be little or no cotton at the end of next season.

Cotton prices as of April 11 follow:

	Open.	High.	Low.	Close.
May	17.65	17.89	17.77	17.77@17.78
July	17.64	17.70	17.50	17.50@17.53
Oct.	17.68	17.78	17.53	17.53@17.56
Dec.	17.65	17.73	17.50	17.50@17.52
Jan.	17.58	17.69	17.46	17.46@17.49
March	17.58	17.74	17.48	17.48

EXTRA STAPLE COTTON

The continuance of the strike in the New England cotton mills has made the market extremely inactive but has not affected price levels. Prices on extra staple cotton, middling in color and grade, were as follows: 1⅛ inch, 26 to 27½ cents; 1 3/16 inches, 29 to 32 cents; 1¼ inch, 32½ to 34½ cents; 1 5/16 inches, 35 to 36½ cents, Egyptian uppers, medium, 26 to 28½ cents; high grade Sak, 49 to 52 cents; Sea Island, choice, 42 to 44 cents. Spot trading was very dull and the transactions during the last two weeks were the smallest in many months.

EGYPTIAN COTTON

Prices in the Egyptian market show little change. Medium grade Sak was quoted around 38 cents to 40 cents for cotton suitable for tire yarn work while higher grades ranged upward to 45 cents and 48 cents tariff paid. Medium grade uppers such as are used in tire yarn mills were quoted at 25 cents to 26 cents but there was little activity in them. Three-sixteenths peelers could be had almost as cheap. Late reports from Alexandria indicate a better feeling in the market there due to the continued steadiness of the American markets. The acreage this year is expected to exceed that of last year; in general the land being cultivated with greater care than last year. Sowing started earlier and there is great activity in all districts.

Seven-Cent Duty on Long Staple Cotton

The Senate Finance Committee has finally agreed upon a tariff of 7 cents a pound on long staple cotton. Representatives of the long staple industry in the southwest made a hard fight to have the committee report a duty of 15 cents a pound. It is very likely that the fight for the higher rate will be continued on the floor of the Senate.

TIRE FABRICS

It is generally believed that the large tire manufacturers will soon have to come into the market for fabric if they expect to take care of an active fall business. The market for high grade fabric has been dead almost since the first of the year. There was a moderate size demand for a few weeks during March for low priced fabric but that has come to an end and now only occasional inquiries are made and little business done.

SQUARE WOVEN

17¼-ounce combed	Egyptian uppers, lb.	.66	@	.68
17¼-ounce carded	Egyptian uppers, lb.	.60	@	.63
17¼-ounce Sakellarides, combed, lb.		.80	@	.85
17¼-ounce Sakellarides, carded, lb.		.70	@	.75
17¼-ounce Peeler, combed, lb.		.60	@	—
17¼-ounce Peeler, carded lb.		.45	@	.50

CORD FABRICS

Combed Sakellarides lb.	.85	@	—
Carded Sakellarides lb.	.75	@	.80
Combed Peeler lb.	.62	@	.65
Carded Peeler lb.	.51	@	.55
Combed Egyptian uppers lb.	.65	@	.70
Carded Egyptian uppers lb.	.60	@	.65

SHEETINGS—DUCKS—BURLAPS

Sheetings—There were reports of some large orders for sheetings but in general the market was quiet and prices remained the same as in the last period. 40 inch, 3.15 yard, was reported slightly easier at 11¾ cents net. 40 inch, 3.60 yard, could be had at 9¾ cents and 2.85 yard at 10¾ cents.

Ducks—The market continued dull and such transactions as were reported were for small lots. Single filling was offered 13½ at 16 cents a pound, card basis, according to grade. Double filling was quoted 16 at 17 cents and shoe ducks at 40 cents.

Burlaps—The strong demand which has been sending prices upward on all grades of burlap abated somewhat during the last few days of the fortnight under review. As the demand fell off prices eased about 5 points in lights and 10 points on heavies. Shipments of burlaps from Calcutta during March were the largest of any month since the middle of 1920. Over 118,000,000 yards were sent out and this country received, 109,000,000 yards of this total compared with 72,500,000 yards in February.

SHEETINGS

40-inch 2.50-yard	yd.	.12½	@	.12¼
40-inch 2.85-yard	yd.	.10¾	@	—
40-inch 3.15-yard	yd.	.11¾	@	—
40-inch 3.60-yard	yd.	.09¾	@	—
40-inch 3.75-yard	yd.	.08¾	@	—
40-inch 4.25-yard	yd.	.07⅞	@	—

DUCKS

Belting	lb.	.30	@	—
Duck	lb.	.30	@	—
Enameling	lb.	.33	@	.37
Shoe Ducks	lb.	.40	@	—
Single filling	lb.	.13½	@	.16
Double filling	lb.	.16	@	.17

BURLAPS
(Carload Lots)

7 -ounce 40-inch	yd.	4.30	@	—
7½-ounce 40-inch		4.30	@	4.45
7½-ounce 45-inch		5.00	@	—
10 -ounce 40-inch		6.35	@	6.45
10 -ounce 45-inch		7.50	@	—
8 -ounce 45-inch		5.15	@	—
10 -ounce 45-inch		6.25	@	6.30
10½-ounce 40-inch		6.40	@	6.50

DRILLS

37-inch 3.25-yard	yd.	.09¾	@	—
37-inch 2.75-yard	yd.	.10½	@	—
37-inch 3.00-yard	yd.	.10¼	@	.10½
37-inch 3.50-yard	yd.	.09¾	@	—
37-inch 3.95-yard	yd.	.08¼	@	—

OSNABURGS

	Open.	High.	Low.	Close.
May	17.98	18.08	17.89	17.92
July	17.40	17.48	17.28	17.31
Oct.	17.06	17.11	16.93	16.94@16.95
Dec.	16.98	17.00	16.87	16.87
Jan.	16.89	16.90	16.76	16.76

30-inch 7-ounce	.08	@	.08½
40-inch 7-ounce	.10	@	—

ALEXANDRIA

March 17, 1922

	Receipts Alexandria Cantars	Exports in Bales to England	Continent	America	Total Exports Cantars	Stock Alexandria Cantars
This week	63,635	4,111	6,344	975	86,751	2,270,773
Same week 1921	63,857	2,700	3,185	2,920	67,375	1,755,203
" " 1920	38,825	1,339	4,773	1,666	58,683	1,048,168
Since 9/1/1921	4,303,128	221,192	143,948	142,576	3,867,355	——
Same time 1920	3,319,255	132,145	93,086	31,352	1,962,254	——
" " 1919	5,373,321	301,566	101,943	227,768	4,768,153	——

Chemicals and Compounding Ingredients

THE GENERAL MARKET—NEW YORK, APRIL 11, 1922—There was only a fair degree of activity in the industrial chemical market during the past period but trading in the large majority of chemicals was very firm. Price changes were few and there was no disposition to try and force material for sale at lower levels for the reason that prices are now at levels where further declines seem impossible. During the whole month of March there was a gradual broadening of the market and the amount of business done during that month compares favorably with the best of the past year. That orders and inquiries slowed down after the first of April is due in a measure to increasing industrial troubles, particularly the coal strike with the possibility of a tie-up if the strike continues. Most materials are in very light supply and there is no large surplus of any of the important chemicals.

ACCELERATORS

Organic

Aldehyde ammonia, crystals	lb.	$ .90 @	.95
Aniline oil, bulk basis,	lb.	.16½ @	.20
Excellerex,	lb.	.50 @	.60
Formaldehyde-Aniline	lb.	.45 @	.50
Hexamethylene-tetramine (powdered)	lb.	.72½ @	.75½
Paraphenylenetramine	lb.	1.55 @	1.65
Thiocarbanilid	lb.	.33 @	.50
Vulcocene	lb.	.35 @	—

Inorganic

Lead, dry red bbls.	lb.	.08 @	.08¼
Lead, sublimed, white	lb.	.06½ @	—
white, basic carbonate	lb.	.06½ @	.07¼
Litharge, domestic	lb.	.08½ @	—
imported	lb.	.17 @	—
Lime, Superfine	lb.	.02 @	.02½
Magnesium, calcined, light,	lb.	.24 @	.25
extra light	lb.	.45 @	—
heavy	lb.	.05½ @	—

COLORS

Blacks

Carbon Black	lb.	.10½ @	.20
Micronex	lb.	.12 @	.17
Lamp black	lb.	.17 @	.45
Bone "	lb.	.05½ @	.07½
Drop "	lb.	.07½ @	.16
Ivory "	lb.	.15 @	.45

Blues

Prussian	lb.	.50 @	.55
Ultramarine	lb.	.10 @	.35
Cobalt	lb.	.23 @	.30

Browns

Iron oxide	lb.	.04 @	.05
Sienna, Italian, raw and burnt	lb.	.05½ @	.14
Umber, Turkey, raw and burnt	lb.	.04¼ @	—

Greens

Chrome, light, c. p.	lb.	.30 @	.32
medium	lb.	.35 @	.36
dark	lb.	.36 @	.45
commercial	lb.	.12 @	—

Reds

Antimony, crimson	lb.	.37 @	.44
golden	lb.	.30 @	—
red	lb.	.20 @	.22
Indian, English, pure	lb.	.12 @	.15
Para toner	100 lb.	1.40 @	—
Rubber makers red	lb.	3.50 @	—
purple	lb.	2.50 @	—
Toluidine tone	lb.	2.50 @	—
Tuscan	lb.	.17½ @	.44
Venetian	lb.	.03½ @	.06½
Vermillion, quicksilver, English	lb.	.85 @	.90
domestic	lb.	.25 @	.30

Whites

Albalith	lb.	.06 @	.06½
Aluminum bronze	lb.	.55 @	.60
Azolith	lb.	.06 @	.06½
Lithopone, domestic (factory)	lb.	.06¼ @	—
Zinc oxide, American Horse Head Special	lb.	.08 @	.08½
XX red	lb.	.07½ @	.08
American Azo: ZZZ (lead free)	lb.	.07½ @	.08
ZZ (under 5 per cent leaded)	lb.	.07¼ @	.07¾
Z (8-10 per cent leaded)		.07 @	.07½
Zinc oxide, French process, White seal	lb.	.11 @	.11½
Green seal	lb.	.09¾ @	.10¼
Red seal	lb.	.08¾ @	.09¼

Yellows

Cadmium sulphide	lb.	1.50 @	1.75
Chrome, light, c. p.	lb.	.16½ @	.17
dark	lb.	.16½ @	.17
medium	lb.	.16½ @	.17
Ocher, French	lb.	.02 @	.03
domestic	lb.	.03 @	.03½
Rubber Makers' Yellow,	lb.	3.50 @	—

COMPOUNDING INGREDIENTS

Aluminum flake	ton	25.00 @	29.50
hydrate	ton	20.00 @	22.00
Ammonium carbonate,	lb.	.07 @	.09
Barium dust	ton	100.00 @	—
Barytes, southern off-color,	ton	.20 @	—
Western, prime white,	ton	23.00 @	—
Basofor	lb.	.04½ @	—
Blanc fixe, dry, f.o.b. works	lb.	.04¼ @	—
Chalk, precipitated, extra light	lb.	.03½ @	.04¼
heavy	lb.	.02½ @	.03¼
Clay, China, domestic,	ton	7.50 @	9.00
imported	ton	22.00 @	23.00
Dixie	ton	22.00 @	32.00
Blue Ridge	ton	20.00 @	32.00
Fuller's Earth, powdered	ton	22.00 @	25.00
Fossil flour	ton	60.00 @	—
Glues, extra white	lb.	.30 @	.40
medium white	lb.	.20 @	.26
cabinet	lb.	.18 @	.30
cabinet low grade	lb.	.15 @	.18
common bone	lb.	.08½ @	.14
Graphite flake, bbls.	lb.	.05 @	—
powdered	lb.	.04 @	.10
Infusorial earth, powdered	ton	60.00 @	—
bolted	ton	65.00 @	—
Mica, powdered	lb.	.15 @	—
Rotton Stone (powdered)	lb.	.02½ @	.04½
Silica (aluminum)	ton	22.00 @	25.00
Soapstone, powdered	ton	.12 @	—
Starch, powdered corn	cwt.	2.32 @	2.42
Talc, domestic	ton	18.00 @	20.00
French	ton	22.50 @	30.00
French, high grade	ton	40.00 @	45.00
Italian,	ton	44.00 @	55.00
Terra Alba, American No. 1	cwt.	1.85 @	2.00
American No. 2	cwt.	1.25 @	—
Tripoli	lb.	.02½ @	—
Whiting, commercial	cwt.	1.15 @	—
Quaker	ton	13.00 @	15.00
English cliffstone	cwt.	1.75 @	2.00
glider's bolted	cwt.	1.20 @	1.35
Paris white American	cwt.	1.25 @	1.35
Zinc Oxide— 5 per cent leaded		.07¼ @	.07¾
10 per cent lead sulphate	lb.	.07 @	.07½
20 per cent lead sulphate	lb.	.07 @	.07½
35 per cent lead sulphate	lb.	.07 @	.07½

(Also see whites)

MINERAL RUBBER

Gilsonite	ton	70.00 @	—
Genasco (factory)	ton	50.00 @	—
Hard hydrocarbon	ton	32.00 @	45.00
Soft hydrocarbon	ton	30.00 @	35.00
Pioneer M.R.	ton	42.00 @	44.00
320 M. P. hydrocarbon (c. l. factory)	ton	47.50 @	50.00
300/310 M. P. hydrocarbon (c. l. factory)	ton	42.50 @	45.00
Sympro, granulated, M.R. (factory)	ton	59.50 @	65.00

SOFTENERS

Acids

Acetic, 28 per cent	cwt.	2.50 @	3.00
Carbolic (phenol)	lb.	.11½ @	.16
Cresylic, 97 p.c.	lb.	.50 @	.55
95 p.c.	lb.	.45 @	.50
Muriatic, 20 degrees	cwt.	1.25 @	1.50
Nitric, 36 degrees	cwt.	5.00 @	6.00
Sulphuric, 66 degrees	ton	16.00 @	17.00
60 degrees, bulk	ton	10.00 @	11.00
Tartaric, crystals	lb.	.30 @	—

Alkalies

Caustic soda, 60 p.c.	cwt.	2.50 @	2.60
Soda ash, 48 p.c.	cwt.	1.27½ @	1.47½

Oils

Castor, No. 3, bbls.	lb.	.10½ @	—
Corn, crude, bbls.	lb.	.11½ @	—
refined	lb.	.13 @	—
Chinawood, bbls.	lb.	.14¼ @	.14½
Cottonseed,	lb.	.10 @	—
Glycerine, c.p. drums	lb.	.16½ @	.17
Linseed,, domestic	lb.	.79 @	—
imported	lb.	.73 @	—
Palm, Niger	lb.	.06¼ @	.06½
Lagos	lb.	.08¼ @	.08½
Peanut, domestic, crude	lb.	.11½ @	.12
Pine, steam distilled over 930° sp. gr.	gal.	1.00 @	—
Rapeseed, refined	gal.	.84 @	.86
blown	gal.	.92 @	.95
Rosin, first rectified	gal.	.37 @	—
second rectified	gal.	.39 @	—
Tar, commercial	gal.	.31½ @	—
Soya Bean, crude, bbls.	lb.	.11¼ @	.11½
" " refined	lb.	.11¾ @	.12

Resins and Pitches

Cumar resin, hard	lb.	.09 @	.12
Cumar resin, soft	lb.	.09 @	.12
Tar, retort	bbl.	9.75 @	—
kiln burned	bbl.	9.00 @	—
Pitch, Burgundy	lb.	.05 @	.06
coal tar	ton	.01½ @	—
pine tar		.03½ @	—
Rosin, grade K	bbl.	5.30 @	—
Strained	bbl.	6.00 @	—
Shellac, fine organe	lb.	.85 @	—

Solvents

Acetone, drums,	lb.	.08 @	.11
Alcohol, denatured, No. 1 bbls.	gal.	.31 @	.33
Methyl, 95 per cent, drums	gal.	.54 @	.56
Ethyl, 190 proof, bbls.	gal.	4.70 @	4.80
Benzol, 90 per cent	gal.	.27 @	.32
pure	gal.	.29 @	.34
Carbon bisulphide,	lb.	.06 @	.07
tetrachloride	lb.	.10½ @	.13
Dimethylaniline	lb.	.35 @	—
Motor gasoline, steel bbls.	gal.	.24 @	—
Toluol, pure	gal.	.30 @	.35
Turpentine, spirits	gal.	.86 @	—
wood	gal.	.78 @	.80
Xylol, pure	gal.	.45 @	.51
commercial	gal.	.31 @	.38

Waxes

Beeswax white, pure	lb.	.35 @	.37
Caranuba, No. 1	lb.	.44 @	.46
Ceresin, white	lb.	.12 @	—
Bayberry	lb.	.21 @	.22
Montan, crude	lb.	.04½ @	.05
Ozokerite ,black,	lb.	.18 @	.20
Paraffine	lb.	.25 @	—
Petrolatum, amber, bbls.	lb.	.04½ @	—
dark amber,	lb.	.04 @	—

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.08 @	.16
Brown	lb.	.11 @	.14
Brown factice	lb.	.07½ @	.15
White factice	lb.	.08½ @	.16

VULCANIZING INGREDIENTS

Lead, black hyposulphite (black hypo)	lb.	.35 @	.42
Orange mineral, domestic	lb.	.11 @	.13
Sulphur chloride (jugs)	lb.	.05 @	.06
Sulphur flour	cwt.	2.35 @	3.00
Bergenport (c. l.)	cwt.	2.55 @	—
superfine, 99½ p.c.	cwt.	2.40 @	2.90

Barytes—The demand has been fairly good and is improving steadily more particularly for the domestic article. Imported goods is offered at $1 a ton less than the price of Western. The quotation for prime Western continues the same, $23.00 per ton, f.o.b. works.

Caustic Soda—There was active buying of caustic soda but no sales of large quantities were noticed. Quotations were $2.50 to $2.60 per hundred pounds in car lots basis 60 per cent. The export interest was more active today.

Soda Ash—Prices were well maintained and the market while quiet was very steady. For carlots, basis 48 per cent, $1.20 in bags and $1.40 in barrels, per 100 pounds, was asked. Dense ash was quoted at $1.17½ at $1.45.

Blanc Fixe—The market was very firm and active. Supplies for prompt delivery are none too plentiful. Prices have stiffened and 4¼ @ 4½ cents a pound were the figures at which business was done.

Lithopone—Prices are steady. Consumption promises to be very heavy this year in both domestic and imported material. Domestic producers continue to quote 6¼ cents in barrels carload lots and 6½ cents, less than carload lots.

Litharge—Very little change was noticed in the market for litharge. Prices continued the same, casks 7½ to 7¾ cents, kegs, 9¾ to 12¼ cents—depending on quantity.

Whiting—There was no change in the price schedule and the demand was fair. Domestic goods ranged from $1.15 to $1.25 per hundred pounds; gilders bolted, $1.20 to $1.35 and English cliffstone, $1.75 to $2.00. Stocks are reported as none too plentiful.

Benzol—Both domestic and export trade has been quite heavy. There is a decided scarcity of pure grades. The 90 per cent ranged from 27 to 32 cents per gallon and pure from 29 to 34 cents.

Carbon Tetrachloride—Rubber makers have been steady buyers and there is a good undertone to the market. Domestic manufacturers quote prices

Palm Oil—The demand was small and the market quiet. Niger was quoted at 6¼ at 6½ cents and Lagos at 8¼ at 8½ cents.

Talc—The demand for all grades of talc continues good and prices hold firm. Domestic is quoted at $18 to $20 a ton; French, $22.50 to $30.00; Italian, $44 to $55.

Aniline Oil—The market was decidedly weak there were large supplies in the hands of producers and good quantities in the resale market. Quotations range from 16 cents to 18 cents according to quantity. These prices can probably be shaded.

Toluol—Supplies are scarce and the demand takes up all the producers turn out or that appear in the resale market. Prices ruled 30 at 35 cents a gallon.

Beta Naphthol—The demand was light and prices eased somewhat. 28 cents a pound was quoted but there were reports of sales at concessions from this figure.

Carbon Bisulphide—There has been a good demand from the rubber trade which held prices steady at 6 at 7 cents per pound according to quantity. Supplies were in fairly good volume.

Crude Rubber

NEW YORK, APRIL 12, 1922

The crude rubber market during the past week has been passing through a season of stimulated activity which has sent prices up from 1¼ cents to 1½ cents a pound on most plantation grades. The advance movement was the result of a better feeling prevailing in London which is thought to have been due to the announcement that the committee appointed by the British Government to investigate the crude rubber situation in British Malaya and Ceylon was "holding conversations" with the Dutch Government. This is taken in British rubber circles, so it is said, to foreshadow a joint agreement of some kind on the part of the two governments looking to some kind of restriction on rubber production or exportation from the Far East.

The best statistical information available indicates that there is still sufficient weights of rubber in sight to act as a depressing influence on the market and very much higher prices are not looked for soon.

The tire manufacturers are now about at their peak of production for the present season and will continue at a good rate until fall. They have not, however, come into the market as big buyers, only taking enough for present requirements as a rule.

Market observers expect prices gradually to move up to 20 cents, but do not look for anything much more this year.

Current quotations on this date are as follows:

Plantations			
Ribbed Smoked Sheets spot	.16	@	.16¼
May	.16¼	@	.16½
May/June	.16½	@	.16¾
July/Sept.	.17	@	.17¼
July/December	.17¾	@	.18
October/December	.18	@	.18¼
Smoked sheets plain, spot	.14½	@	.14¾
First Latex Pale Crepe, spot	.16	@	.16¼
May	.16¼	@	.16½
May/June	.16½	@	.16¾
July/Sept.	.17	@	.17¼
July/Dec.	.17¾	@	.18
October/December	.18	@	.18¼
Amber Crepe No. 1	.15¼	@	.15½
" " " 2	.14¾	@	.15
" " " 3	.14¼	@	.14½
Light clean thin brown, Crepe	.15	@	.15¼
Clean Thin Brown Crepe	.14½	@	.14¾
Commercially Clean thin brown crepe	.14	@	.14¼
Roll Brown Crepe spot	.13½	@	.13¾
July/Sept.	.14	@	.14¼
Paras			
Madeira Fine	.20	@	.20¼
Acre Fine	.19	@	.19¼
Up-river Fine	.18¾	@	.19
Up-river Medium	.17½	@	.17½
Up-river Caucho ball	.13½	@	.13¾
Up-river Coarse	.13	@	.13¼
Islands Fine	.16½	@	.17
Islands, Medium	.15½	@	nom.
Islands Coarse	.07¾	@	.08
Cameta	.09½	@	.10
Xingu Ball	.11¼	@	.11½
Tapajos fine, spot	.16	@	.16½
Pontianac			
Prime Pressed	.13	@	.13½
Plantation	.06¾	@	.07
Bangermassin	.08	@	.08
Palembang	.09½	@	.10
Siak Gutta Percha	.16½	@	.17
Prime Macassar	2.75	@	2.85
Balata			
Panama Block	.30	@	.40
Surinam Sheets	.65	@	.67
Columbia Block	.42	@	.43
Venezuela Block	.51	@	.53

Reclaimed Rubber

NEW YORK, APRIL 11, 1922

Although the price of crude rubber has no great effect on the reclaimed rubber market until the former commodity is quoted at 20 cents or better, its slow and steady rise since our last report has greatly encouraged reclaimers, who are beginning to visualize sales of their product outside the sole and heel branch of the greater industry.

Quotations remain practically unchanged and are nominally as follows:

Standard Reclaims			
Floating	$.12	@	$.13
Friction	.12	@	.13
Boots and Shoes	.09	@	.10
Boots and Shoes (washed)	.13	@	.14
Mechanical	.08	@	.10
Hose	.10½	@	.11½
Tires, truck	.08	@	.09
Tires, auto	.09	@	.10
White	.13	@	.14

Scrap Rubber

NEW YORK, APRIL 11, 1922

The rise in the price of crude rubber has had little effect thus far on the scrap rubber market, which continues to be very quiet. Red tubes is the only grade which showed encouraging activity; prices rose slightly due to export orders.

Boots and shoes continued to decline due to the accumulation of this grade occasioned by the advent of spring. Stocks in this grade are growing larger and practically no large orders are reported.

Quotations of this date are nominally as follows:

Auto tire peelings	.01⅛	@	.01¼
Standard White auto	.01	@	.01⅛
Mixed auto	.00½	@	.006/10
Bicycle tires	.00¼	@	.00⅜
Clean solid truck tires	.00⅜	@	.00⅞
Boots and shoes	.02⅜	@	.02½
Arctics, trimmed	.00¾	@	.02
Arctics, untrimmed	.01	@	—
Inner tubes, No. 1	.03¼	@	.03½
Inner tubes, compounded	.02½	@	.02⅝
Battery jars, black compounded	Nominal		
Battery jars No. 1 bright fracture	Nominal		
Inner tubes, red	.02⅝	@	.02⅜
Heels and pads	Nominal		
Black mixed	.00¼	@	.00⅜
Garden hose	.00½	@	.00⅝
Air brake hose	.00½	@	.00¾
Red packing	.01	@	.01¼
Red mixed rubber	.01¾	@	.02
White mixed rubber	.01¾	@	.02

Trade Marks Applied For

[The following are trade-mark applications pertinent to our field pending in the United States Patent Office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Barrister Building, Washington, D. C. or Bush Building, 130 West 42 Street, New York, trade-mark specialists. As an additional service feature to its readers this Journal gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.]

QUEEN OF SCOTS—No. 150,656. A. Cunningham, Limited, Stewarton, Scotland. For gloves of rubber, rubber and fabric, and leather and rubber.

GROWING QUEEN—No. 156,636. Thomas G. Plant Company, Boston, Mass. For men's, women's, and children's boots, shoes, and slippers of leather, rubber, felt, silk, cloth, or other fabric construction.

LITTLE QUEEN in script—No. 155,635. Thomas G. Plant Company, Boston, Mass. For men's, women's, and children's boots, shoes, and slippers of leather, rubber, felt, silk, cloth, or other fabric construction.

THE DORCAS SHOE in small panel in lower part of device representing coat of arms—with small "D" within diamond in center—No. 155,006. D. Armstrong & Co., Inc., Rochester, N. Y. For shoes made of leather, fabric, or rubber for women.

THE GRANT FLEXATED SHOE—No. 153,546. The Excelsior Shoe Company, Portsmouth, Ohio. For shoes and boots made of leather, rubber, fabric, or combinations of those materials.

IDEAL—No. 151,168. Ideal Shoe Manufacturing Company, Milwaukee, Wisc. For shoes made from leather, rubber, and fabric or combinations thereof.

ARROW—No. 155,227. Hood Rubber Company, Watertown, Mass. For rubber heels.

CIRCULAR Green disk—No. 139,818. Rubber-Hide Company, Boston, Mass. For boots and shoes of a combination of leather, rubber, and fabric.

PICTURE of a plurality of spaced dark lines arranged upon the lighter ground of the hose, said lines extending transversely of the hose. The color and the manner of forming these lines may be arbitrarily selected, the colors already used having been black, blue, and red, and the manner of forming them having been by weaving into the fabric, as one of the filler threads thereof, a thread, of the desired color—No. 127,651. Metal Hose & Tubing Co. Inc., Brooklyn, N. Y. For fabric-covered rubber hose with metal lining.

M. V.E.C. as monogram in outline letters within a circle—No. 141,728. Metropolitan-Vickers Electrical Company, Ltd., London, England. For electric automobile tire vulcanizers.

American Rubber Patents

1,410,821—Colin MacBeth, Birmingham, England, assignor to The Dunlop Rubber Co. Ltd., Westminster, London, England. Transporting System Particularly For use in Connection With The Manufacture of Tires.

1,411,231—Morris L. Weiss, Brooklyn, N. Y., assignor to Dovan Chemical Corp., Wilmington, Del. Vulcanization Accelerator.

1,411,095—James Edward Henry, New York, N. Y. Vulcanizer.

1,410,693—Robert MacDonald, Schenectady, N. Y. assignor, by mesne assignments, to Frederick W. Mangold, Schenectady, N. Y. Vulcanizer.

1,411,225—Peter F. Schecher, St. Marys, Kans. Vulcanizer.

1,410,732—Adolph C. Brose, New York, N. Y. Apparatus and Method for Imprinting Hard-Rubber Articles.

1,410,615—Wilbur Amos Snook, Trenton, N. J. Mold For Making Rubber Articles.

1,410,699—Rutherford B. Martin, New York, N. Y. Method of Treating Manufactured Rubber.

1,410,704—Mary Pierson Mitchell, Eaton, Ohio. Tire.

1,410,669—John R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York. Cushion Tire.

1,410,630—Nathaniel G. Warth, Gallipolis, Ohio. Inner Tube For Pneumatic Tires.

New Incorporations

NEW YORK

Malcome Tire Co., to manufacture tires. Incorporators: A. A. Deutsch, H. Margoshes, and T. Albert. Attorney, Rosett and Deutsch, 199 Broadway, New York City.

The Semon Tire Co., to deal in tires, etc. $5,000. Incorporators: I. Sevin, 179 Delancey street; H. and F. Monastirsky, 62 Attorney street—New York City.

Allen Rubber Corporation, to deal in tires $30,000. Incorporators: H. Perlitch, A. Levy, M. Greenberger—1133 Broadway, New York City.

The Florence Webbing Corporation, to manufacture webbing and woven fabrics. $20,000. Incorporators: E. Krenz, L. J. Warener and W. H. Downing—East Rochester, New York. Principal office, East Rochester, New York.

Union Rubber Products Corporation, to deal in manufactured rubber goods. $5,000. P. R. Fernald, president; H. F. Schrader, vice president and treasurer; R. C. Smith, secretary. Principal office, 110 West 40th street.

Goodyear Rubbed Coat Co., to manufacture and sell waterproof garments. $5,000. Incorporators: I. R. Ballin, 778 De Kalb avenue, F. and S. Zasuly, 293 Dinsion avenue—Brooklyn, New York.

The Spad Manufacturing Company, (formerly the Omar Tire & Rubber Co., to manufacture hard rubber specialties. $100,000. H. L. Bair, president; L. J. Bair, vice president and general manager; R. Buxton, treasurer and secretary. Principal office, 42 West 39th street, New York City.

OHIO

Linatire Products Company, to manufacture and deal in tires. $10,000. Incorporators: S. D. Stanson, R. G. Thomas, D. C. Murphy, A. C. Littell and L. E. Mentzer—Akron, Ohio. Principal Office, Akron, Ohio.

Queen City Rubber Company, to manufacture and deal in all kinds of rubber goods. $10,000. C. F. Davis, Jr., president; L. D. Davis, vice president;—3641 Zumstein avenue, Cincinnati, Ohio; C. F. Davis, treasurer—2130 St. James Avenue, Cincinnati, Ohio; I. Surtees, secretary.

The Tire Supply Company, to deal in tires etc. Incorporators: J. A. Elden, D. N. Grill, G. T. Strapp, M. H. Burns, M. H. Champ—Cleveland, Ohio. Principal office, Cleveland, Ohio.

Heavy Duty Apron Company, to manufacture rubber aprons, rubber sheets, etc. $5,000. Incorporators: M. Wise; E. Arenson, L. Arenson and S. Arenson. Principal office, Akron, Ohio.

The Brolah Company, to manufacture all kinds of rubber goods. Incorporators: C. W. Wright, O. Talmadge, M. M. Greenberger, H. A. Sullivan, J. D. Hotchkiss and J. B. Keller—Akron, Ohio. Principal office, Akron, Ohio.

Associated Motor Service Company, to manufacture and deal in tires and tubes. $10,000. Incorporators: N. H. Offmeister, A. E. Brencken, W. B. Lemmos, F. P. Ables and F. E. Hill—Cleveland, Ohio. Principal office, Cleveland, Ohio.

DELAWARE

The Hubbell Rubber Company, to manufacture and deal in tires, etc. $600,000. Incorporators: M. L. Rogers, M. M. Nichols and W. G. Singer—Wilmington, Delaware. Delaware agent, Corporation Registry Co., 100 West 10th street, Wilmington, Delaware.

Eastburn and Sharpless Company, Inc., to manufacture and deal in tire valves. $500,000. Incorporators: H. G. Eastburn, M. E. Doto and E. M. Craig—Wilmington, Delaware. Delaware agent, H. G. Eastburn, Room 700, Ford Building, Wilmington, Delaware.

Combined Tire Sales Association, to manufacture and deal in tires. $100,000. Incorporators: M. E. Mettler, F. L. Mettler and P. M. Gilkey—Wilmington, Delaware. Delaware agent, F. L. Mettler, 832 Market street, Wilmington, Delaware.

COLORADO

The Motor Tire Co., to deal in tires. $10,000. Incorporators: H. J. Gast, J. F. Musgrave and J. I. Gilbert. Principal office, Denver, Colorado. Office of agent, 2729 West 36th avenue, Denver, Colorado.

ILLINOIS

S. & W. Tire & Rubber Co., to deal in tires. $5,000. Incorporators: E. H. Silldorf, 2012 Lunt avenue; E. C. and C. E. Silldorf, 1753 Jarvis avenue—Chicago, Illinois. Principal office, Chicago, Illinois.

MAINE

United Rubber Corporation, to deal in tires and accessories. E. J. Warren, president and treasurer, Bangor, Maine; D. I. Laffin, secretary, Portland, Maine. Principal office, Portland, Maine.

Yield-Wheel Corporation, to manufacture and deal in tires. $200,000. H. Mitchell, president and secretary; D. E. Phillips, treasurer—Kittery, Maine. Principal office, Kittery, Maine.

TENNESSEE

The General Tire Company, to deal in tires. $25,000. Incorporators: W. F. Murphy, W. Pate, D. P. Mc Ervin, W. H. Kirkpatrick and B. Douglas. Principal office, Nashville, Tennessee.

TEXAS

The Stoneham Tire Company, to deal in tires and tubes. $5,000. J. A. Stoneham, president; J. J. Bunn, vice president; J. J. Stoneham, secretary and treasurer. Principal office, Paris, Texas.

Mexia Battery Company, Inc. $100,000. Incorporators: J. W. Prickett, Mayme A. Prickett and Annie E. Prickett. Principal office, Mexia, Texas.

WASHINGTON

The Tape Tire Corporation, to manufacture and deal in tires, tubes, etc. $1,250,000. Incorporators: F. B. Carlisle, H. C. Sampson, B. Embree, T. J. Appleton and T. J. Appleton, Jr. Principal office, Seattle, Washington.

Capital Increase

Fred Stern & Co., Manhattan, $1,000,000 to $1,010,000.

Book Review

"Brown Bast" by A. R. Sanderson, F.L.S., and H. Sutcliffe, A.R.C.Sc., F.R.M.S, published by the Rubber Growers' Association, London, a complete treatise on the "disease" known by that name, will interest every rubber estate manager.

The full description of the bark and cortex of the rubber tree affected with Brown Bast makes diagnosis comparatively easy, after one or two typical cases have been carefully examined, especially in the case of trees which show the "disease" in the middle or later stages. The real difficulty lies in the early stages, but the very fact that a tree has ceased to yield latex should be sufficient indication that the cortex may be affected by Brown Bast, although the typical symptoms may not be present at that time.

In the chapters dealing with the cause of Brown Bast the theory is advanced that the "disease" is physiological, and is due to the operation of tapping. Further investigation, however, is required in order to clear up several obscure points, especially the relationship between the frequency of tapping and the incidence of the "disease."

The book, which is profusely illustrated with photographs and reproductions of microsections, contains an appendix on "dry" trees, in which the details and significance of the incidence of this symptom are considered.